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RECORD, CASE Nos. 13,647 & 13,648.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1891.

TERM No., ~~425.~~ 96

WILLIAM SHANNON, APPELLANT,

vs.

PRESTON M. BRUNER.

TERM No., ~~426.~~ 97

PRESTON M. BRUNER, APPELLANT,

vs.

WILLIAM SHANNON.

APPEALS FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF MISSOURI.

FILED SEPTEMBER 23, 1889.

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TERM No., 425.

WILLIAM SHANNON, APPELLANT,

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vs.

WILLIAM SHANNON.

APPEALS FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF MISSOURI.

INDEX.

	Original.	Print.
Caption	1	1
Bill of complaint	1	1
Subpœna in chancery	9	5
Marshal's return	9	6
Answer	10	6

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	Original.	Print.
Replication	18	11
Stipulation as to evidence	18	11
Assignments of patent	20	12
Depositions for complainant	22	14
Testimony of Peter Trebel	23	14
Charles Monkhouse	42	28
Depositions for defendant	52	35
Testimony of Preston M. Bruner	52	35
John Soell	76	49
Joseph E. Grimm	87	57
Francis Sullivan	95	62
S. P. McKelvey	99	64
Mr. Bruner (recalled)	106	69
George L. Schmidt	107	69
Julius Hopke	122	79
George L. Schmidt (recalled)	132	86
Nathaniel G. Yerks	135	87
Adam Brandt	141	91
Preston M. Bruner (recalled)	148	96
Samuel Knight	153	99
Interlocutory decree	161	103
Master's report	163	104
Record of proceedings before master	168	107
Testimony of Preston M. Bruner	169	108
William Shannon	210	139
P. M. Bruner (recalled)	212	140
George A. Hymes	221	147
William Shannon (recalled)	223	148
James O'Toole	228	152
Andy Johnson	231	154
P. M. Bruner (recalled)	233	155
Samuel C. McKelvey	239	160
Exceptions to master's report	244	164
Amended exceptions to master's report	245	165
Order sustaining exceptions to master's report	246	166
Master's supplemental report	247	166
Record of proceedings before master	249	168
Testimony of P. M. Bruner (recalled)	250	168
W. A. Borman	255	171
J. K. Hardy	262	176
John Lamb	266	179
William Shannon	274	185
John A. Blackburn	281	190
Francis J. Sullivan	285	193
P. M. Bruner (recalled)	292	197
William Shannon	308	209
Exceptions to supplemental report of master	315	214
Amended exceptions to supplemental report of master	318	216
Final decree	323	219
Order allowing appeal and cross-appeal	324	219
Order approving appeal bonds	324	220
Complainant's appeal bond	326	221

	Original.	Print.
Defendant's appeal bond	327	221
Opinion on final hearing	328	222
Opinion on exceptions to master's report	334	225
Order to certify original paper exhibits to United States Supreme Court	341	229
Clerk's certificate	342	229
Assignment of errors by Wm. Shannon	343	230

1 UNITED STATES OF AMERICA,
Eastern Division of the Eastern Judicial District of Missouri, } *ss:*

In the Circuit Court of the United States in and for the Eastern Division of said Judicial District.

Be it remembered that on the twenty-fifth day of March, A. D. 1886, there was filed in the circuit court of the United States for the eastern district of Missouri a certain bill of complaint in words and figures following, to wit:

(*Bill of Complaint.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } In Equity.

To the honorable the judges of the circuit court of the United States in and for the eastern district of Missouri:

William Shannon, a citizen of said State, brings this bill against said Preston M. Bruner, a citizen of said State, and both residents within the eastern district thereof; and thereupon your orator complains and says—

That heretofore and before the 19th day of July, 1870, John J. Schillinger, then and now a citizen of the United States, residing in the city of New York, in the State of New York, became and was the original and first inventor of a new and useful improvement in concrete pavements not known or used before his invention thereof and not in public use or on sale for more than two years prior to the date of his application for letters patent
2 therefor; that said John J. Schillinger, being so as aforesaid the original and first inventor and discoverer of said improvement, did on the 19th day of July, 1870, upon due application therefor, and having in all things complied with the conditions and requirements of the acts of Congress in such cases made and provided, obtained letters patent of the United States of said invention or improvement in due form of law, under the seal of the Patent Office of the United States, by which said letters patent there were granted and secured, or intended to be granted and secured, to said John J. Schillinger, his executors, administrators, and assignees, for the term of seventeen years from the said 19th day of July, 1870, the full and exclusive right of making, using, and vending to others to be used the said invention or improvement described in said letters patent; that said John J. Schillinger, having for good and lawful causes, after the issue of said letters patent as aforesaid, surrendered the same to the Commissioner of Patents and having made due application therefor, and having in all things complied with the re-

quirements and conditions of the acts of Congress in such case made and provided, on the 2nd day of May, 1871, obtained new letters patent—No. 4364 of reissued letters patent—for the same invention for the residue of the said term of seventeen years from the 19th day of May, 1870, which said reissued letters patent were issued in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior, countersigned by the Commissioner of Patents, bearing date of the 2nd day of May, 1871, and numbered 4364 of reissued letters patent, which said reissued letters patent are now remaining of record in the Patent Office of the United States, as by said letters patent or a duly certified copy thereof, in court ready to be produced, will fully and at large
3 appear. A copy of said reissued letters patent and a drawing thereof, forming a part of this bill, is hereto annexed, marked "Exhibit A;" that said original letters patent referred to, issued on the 19th day of May, 1870, numbered 105,599, a copy of which, with a drawing thereof, is hereto annexed and marked "Exhibit B" and forming a part of this bill.

Your orator further shows — your honors that on the 1st day of March, 1875, said John J. Schillinger filed and entered in the Patent Office of the United States, according to law, his disclaimer to certain portions of the things claimed by him in said reissued letters patent, as by reference to said disclaimer or to the certified copy thereof, here in court ready to be produced, will more fully and at large appear, a copy of which disclaimer forms a part of this bill and is hereto annexed, marked "Exhibit C;" that heretofore, to wit, on or about the 27th day of May, 1879, the said John J. Schillinger, for a valuable and lawful consideration, sold and assigned to J. L. Hull and A. Hull, persons then residents of the said city of St. Louis, State aforesaid, and copartners trading under the firm and style of J. L. & A. Hull, all his right, title, and interest in and to said reissued letters patent No. 4364 and in the invention or process therein described, claimed, and secured, so far as the city of St. Louis and the county of St. Louis, in the State of Missouri, is concerned, and granted and assigned to said J. L. & A. Hull sole and exclusive right to make, use, and vend to others in said city and county said invention and process, by a deed of assignment in writing, duly executed, dated the 22nd day of May, 1879, which deed or assignment is recorded in the Patent Office of the United States, in Liber O, at page 364, of the records of assignments in said office, as will more fully appear from said deed or assignment, which is herewith filed as a part of this bill and marked "Exhibit D."

Your orator further shows unto your honors that by means
4 of an instrument in writing, duly executed by said J. L. & A. Hull on the 5th day of March, 1886, and by them delivered to your orator, their entire right and interest in and to said improvement and process described in said reissued letters patent in and for the city of St. Louis and county of St. Louis, State aforesaid, became and still is vested in your orator, and by said instrument there were assigned to your orator by said J. L. &

A. Hull all their claims and rights against any and every person who may have infringed their rights under said reissued letters patent, a copy of which assignment is hereto annexed and made part of this complaint and marked "Exhibit E."

And your orator further shows that the validity of said reissued letters patent has been acquiesced in by the public and has been established in the several suits hereunder mentioned and by the said John J. Schillinger prosecuted in the circuit courts of the United States, to wit:

Schillinger *vs.* Gunther, United States circuit court for the southern district of New York.

The California Artificial Stone Paving Company *vs.* W. D. Perine, United States circuit court for the district of California.

Schillinger *vs.* The Greenway Brewery Co., United States circuit court for the northern district of New York.

Schillinger *vs.* Hurlbut, United States circuit court, northern district of Illinois.

And your orator further shows your honors that the said defendant, Preston M. Bruner, well knowing the premises and the rights and privileges secured unto your orator and his assignors, the said J. L. & A. Hull, and that in order to deprive them of the profits, benefits, and advantages which might and otherwise would have accrued to them by reason of said vested rights at the city of St. Louis, in the State of Missouri, within the said eastern district of Missouri, and without the license or permission of your orator or his assignors, the said J. L. & A. Hull, or either of them, has since the 27th day of May, 1879, and at divers times since that time, and before the commencement of this suit, unlawfully and wrongfully made or caused to be made, sold or caused to be sold, used or caused to be used, concrete pavements containing the said invention or discovery and improvement or a substantial or material part thereof, which said unlawful making, use, or sale by the defendant was and is in violation of the exclusive rights and privileges vested as aforesaid in your orator, and that by such unlawful making, using, and selling the defendant has derived and received great gains and profits, but to what amount your orator is ignorant and cannot set forth, but your orator believes the same to be about the value of the sum of $5,000, and charges the fact so to be, and prays that the defendant may be required to make a discovery as to his use of said invention and all gains and profits received by him therefrom by means thereof.

Your orator further shows that said defendant has been warned and requested to desist from infringement of said vested rights, but that said warning and request have been wholly disregarded by the defendant and he still continues and threatens still further to continue the infringement of your orator's said rights, and that his preparation and determination to continue the same have the effect to encourage others to infringe the rights of your orator under said letters patent; all of which acts and doings are in violation of the exclusive rights and privileges as aforesaid vested in your orator under and by virtue of said reissued letters patent and said assign-

ments and are contrary to equity and good conscience and
6 tend to the manifest injury of your orator in the premises.

To the end, therefore, that the defendant may, if he can, show reason why your orator should not have the relief hereby prayed, and that he make a full disclosure and discovery of all the matters aforesaid, and upon his corporal oath and according to the best and utmost of his knowledge, remembrance, information, and belief full, true, direct, and perfect answer make to the matters and things hereinbefore stated and charged, and particularly to such of the several interrogatories hereinafter numbered and set forth as by note hereunder written he is required to answer—that is to say:

1st. Whether the said original letters patent numbered 105,599 and reissued letters patent No. 4364, for an improvement in concrete pavements, hereinbefore mentioned, were granted and issued to the said John J. Schillinger as aforesaid.

2nd. Whether defendant or any one by his authority or direction has at any time since the 27th of May, 1879, within the city of St. Louis or the county of St. Louis, State aforesaid, made, used, or sold concrete pavements constructed in whole or in part upon the principles or by the process or in the manner described in said reissued letters patent granted to John J. Schillinger as aforesaid; and, if so, at what times and in what quantities. State definitely upon whose premises—that is to say, adjacent to what blocks or lots—such pavements were laid, the name of the principal laborer or foreman, if any, employed in the construction thereof, and the means whereby the several parcels of such pavements were marked off or divided into distinct blocks.

And that the said defendant may answer the premises, and that he may be decreed to account for and pay over the income or profits thus unlawfully derived or which might have been derived
7 from the violation of the rights of your orator and his assignors as aforesaid, your orator prays that your honors upon entering of the decree in favor of your orator against said defendant for infringement, as above prayed for, may also proceed to assess or cause to be assessed, under your directions, as well the profits or income to be derived therefrom, to be accounted for as aforesaid, and also in addition thereto the damages sustained by your orator by reason of such infringement, and that your honors may increase the actual damages so assessed to a sum equal to three times the amount of the assessment, under the circumstances of the wilfull and unjust infringement committed by said defendant as hereinbefore set forth; and, further, that the said defendant may be restrained from any further violation of the rights of your orator as aforesaid, your orator prays that your honors may grant a writ of injunction, issuing from and under the seal of this honorable court and issued by one of your honors, perpetually enjoining or restraining the said defendant, his clerks, attorneys, servants, agents, and workmen, from any further construction or sale or use in any manner of said patented improvement or any part thereof in violation of the rights of your orator as aforesaid; and your orator further prays that a provisional or preliminary injunction be issued, restraining

the said defendant from any further infringement of said recited letters patent pending this cause, and it prays for such other relief as the equity of this case may require and to your honors may seem meet.

May it please your honors to grant unto your orator not only a writ of injunction conformable to the prayer of this bill, but also a writ of subpœna of the United States of America, directed to said Preston M. Bruner, commanding him, on a day certain therein to be
8 named, to appear and answer unto this bill of complaint, and to abide and perform such order and decree in the premises as to this court shall seem meet and may be required by the principles of equity and good conscience.

ALEX. YOUNG & ALBERT BLAIR,
Counsel and Solicitor- for Complainant.

NOTE.—The defendant is required to answer each of the foregoing interrogatories numbered 1 and 2, inclusive.

ALEX. YOUNG.
ALBERT BLAIR.

STATE OF MISSOURI, } ss:
City of St. Louis, }

William Shannon, being duly sworn, deposeth and sayeth that he has read the foregoing bill of complaint and of his own knowledge knows the same to be true except as to those matters therein stated on information and belief, and as to those matters stated on information and belief he believes them to be true; and he further deposes and says that he verily believes that John J. Schillinger was the first and original inventor of the improvement patented to him, as set forth in said bill of complaint, and that said improvement was not, to the best of his knowledge, information, and belief, in use or had been described before the invention thereof by said Schillinger.

WILLIAM SHANNON.

Sworn to and subscribed before me this 25th day of March, A. D. 1886.

A. P. SELBY, *Clerk.*

Upon the filing of said bill of complaint there was issued a subpœna in chancery, which, with the marshal's return of service endorsed thereon, is in words and figures following, to wit:

9 (*Subpœna in Chancery.*)

UNITED STATES OF AMERICA, } sct:
Eastern District of Missouri, }

In the Circuit Court of the United States in and for said District.

The President of the United States of America to Preston M. Bruner, Greeting:

You are hereby commanded to be and appear at Rules, to be held at the office of the clerk of the circuit court of the United States in

and for the eastern district of Missouri, on the first Monday of May next, at the city of St. Louis, then and there to answer the bill of complaint of William Shannon, a citizen of the State of Missouri, filed against you on the 25th day of March, 1886; hereof fail not.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, the 25th day of March, 1886.

[SEAL.] Issued at office, in the city of St. Louis, under the seal of said circuit court, the day and the year last aforesaid.

A. P. SELBY, *Clerk.*

MEM.—The defendant to enter his appearance in this suit in the clerk's office on or before the day at which the writ is returnable; otherwise the bill may be taken *pro confesso.*

A. P. SELBY, *Clerk.*

(*Marshal's Return.*)

UNITED STATES OF AMERICA, *Eastern District of Missouri,* } *sct:*

I have executed the within writ on the 26th day of March, A. D. 1886, upon the within-named defendant, Preston M. Bruner, by delivering to him a true copy of said writ at St. Louis, in above district.

J. E. D. COUZINS,
United States Marshal, Eastern District of Missouri,
By J. E. COUZINS, *Deputy.*

Marshal's Fees.

1 service, at $2.00	2 00
Mileage, 2 miles at 6 cents	12
Total	2 12

And afterwards, to wit, on the third day of May, A. D. 1886, there was filed in said cause an answer in words and figures following, to wit:

(*Answer.*)

United States Circuit Court, Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Respondent. } In Equity.

The answer of Preston M. Bruner, respondent, to the bill of complaint of William Shannon, complainant.

This respondent, now and at all times hereafter saving and reserving unto himself all benefit and advantage of exception which can or may be had or taken to the many errors, uncertainties, and

other imperfections in the said complainant's said bill of complaint contained, for answer thereto or unto so much or such parts thereof as this respondent is advised is or are material or necessary for him to make answer unto, this respondent, for answer, sayeth:

This respondent is informed and believes it to be true that on or about the 19th day of July, 1870, letters patent of the United
11 States for alleged improvement in pavements were granted to John J. Schillinger, as alleged in said bill of complaint; and this respondent is informed and believes it to be true that said letters patent were surrendered by said John J. Schillinger, and that on or about the 2nd day of May, 1871, a reissued letters patent, No. 4364, were issued to the said John J. Schillinger, as alleged in said bill of complaint.

And this respondent, further answering, says that he is not informed, save by said bill of complaint, whether or not, on or about the 27th day of May, 1879, or at any other time, the said John J. Schillinger did assign to J. L. Hull and A. Hull all or any of his right, title, and interest in and to the said reissued letters patent No. 4364 and the alleged process therein described and claimed, so far as the city and county of St. Louis, in the State of Missouri, is concerned, or elsewhere, and whether he granted to J. L. and A. Hull his sole and exclusive right to make, use, and vend in said city and county said alleged invention and process, or whether, if made, the transfer was in writing, or whether, if in writing, it was duly recorded in the Patent Office, and leaves the complainant to make such proof thereof as he may be advised is material.

And this respondent, further answering, says that he is not informed, save by said bill of complaint, whether or not, by an instrument in writing or otherwise, said J. L. and A. Hull did, on the 5th day of March, 1886, or at any other time, convey to the said complainant the entire right, title, and interest in and to the said alleged improvement and process described in said reissued letters patent for the city and county of St. Louis, or whether any right in the said reissued letters patent is at the present time vested in the said complainant, or whether the said transfer, if made, was duly recorded as required by law, or whether said J. L. and A. Hull did
12 convey to the complainant all their alleged claims and rights against any and every person who may have infringed said reissued letters patent, and leaves the complainant to make such proof thereof as he may be advised is material.

This respondent, further answering, denies that the public generally have acquiesced in the validity of said reissued letters patent, and leaves the complainant to make such proof thereof as he may be advised is material.

This respondent, further answering, says on information and belief that *in* a suit on the said reissued letters patent, decided July 6th, 1885, in the supreme court of the District of Columbia, wherein John J. Schillinger *et al.* were complainants and Henry L. Cranford *et al.* were defendants, was decided against the complainants by their honors Hagner, James, and Merrick, as will be shown by a duly certified copy of the opinion in said cause, in court to be produced,

and that in said opinion the court stated that the process used by the defendants was much more like the complainants' patent than any of the processes used by the defendants in the causes enumerated in said complainants' said bill of complaint, which are specifically mentioned in said opinion, and, notwithstanding these differences between the defendants' process and that of the other defendants, the court decided against the complainants, as will be shown by said certified copy of said opinion.

And this respondent, further answering, says that he has separate and distinct defences to this patent which were not set up in the suits mentioned in the complainants' said bill of complaint.

And this respondent, further answering, says that on or about the 15th day of July, 1882, the said J. L. and A. Hull did enter
13 suit against this respondent on said reissued letters patent, and did annoy this respondent for a number of months by said suit, and finally had the said bill dismissed before a hearing could be had, as will be shown by the records of the cause in this court.

And this respondent, further answering, denies on information and belief that the said John J. Schillinger was the true, original, and first inventor of the pavement covered by the said reissued letters patent or the original thereof, and this respondent says on information and belief that it was not an invention when produced by said John J. Schillinger, but that it was a mere aggregation of parts, not producing any useful result when combined together, and that it was not novel at that time, and that a pavement substantially identical with it in character was previously patented in letters patent of the United States and Great Britain as follows:

U. S. patents.

No. 97893, dated December 14, 1869, to J. E. Dutch, of Washington, D. C.

No. 90084, dated May 18, 1869, to J. E. Dutch, of Washington, D. C.

No. 92390, dated July 6, 1869, to H. B. Steele, of Winchester, Connecticut.

No. 97088, dated November 23, 1869, to F. N. Hopkins, of Baltimore, Maryland.

No. 80856, dated August 11, 1868, to P. Caduc, of San Francisco, and W. H. DeValin, of Sacramento, California.

No. 40650, dated November 17, 1863, to A. Straub, of Milton, Pennsylvania, and I. Straub, of Cincinnati, Ohio.

No. 40651, dated November 17, 1863, to A. Straub, of Milton, Pennsylvania, and I. Straub, of Cincinnati, Ohio.

No. 46975, dated March 21, 1865, to C. C. Reinhold, of
14 Milton, Pennsylvania.

No. 5475, dated March 14, 1848, to Horace P. Russ, of New York, N. Y.

No. 261 (reissue), dated March 28, 1854, to Horace P. Russ, of New York, N. Y.

No. 93142, dated July 27, 1869, to A. Van Camp, of Washington, D. C., and M. M. Hodgemann, of the city of St. Louis, State of Missouri.

English patents.

No. 943 of 1860, to J. S. Little.
No. 952 of 1860, to W. Smith.
No. 555 of 1861, to T. Scott.
No. 2199 of 1861, to T. Scott.
No. 350 of 1852, to A. Chesneau.
No. 2976 of 1853, to W. E. Woodhouse.
No. 9505 of 1842, to J. S. Lillie.
No. 3915 of 1815, to J. J. A. MacCarthy.
No. 7489 of 1837, to R. T. Claridge.
No. 567 of 1853, to J. F. D. De Bussac.
No. 13760 of 1851, to J. Warren.
No. 2240 of 1866, to J. H. Johnson.
No. 11403 of 1846, to M. J. Milon.
No. 340 of 1854, to J. F. D. De Bussac.
No. 591 of 1866, to J. H. Johnson.
No. 267 of 1853, to C. Hadley.
No. 7991 of 1839, to G. R. D'Harcourt.
No. 11466 of 1846, to R. Love, Jr.
No. 445 of 1859, to P. E. Fraissinet.
No. 5652 of 1826, to J. B. Macneill.
No. 610 of 1853, to T. B. Dodgson.
No. 2659 of 1855, to F. Coignet.
No. 1080 of 1864, to John Little.

15 Further answering, this respondent says on information and belief that still another like pavement was known, made, and used at and in the city, county, and State of New York as early as August, 1869, by one John Nowak, residing in said city, county, and State of New York; and that still another like pavement was known, made, and used at and in Union, in the county of Hudson and State of New Jersey, by one Charles J. Bandman, residing in said Union, Hudson county, N. J., as early as 1869; and that still another like pavement was known, made, and used at and in Union, in the county of Hudson and State of New Jersey, as early as 1869 by one Gottlieb Seyfran, residing at said Union, Hudson county, New Jersey; and that still another like pavement was known, made, and used at and in Brooklyn, in the county of Kings and State of New York, by one Nathaniel G. Yerks, residing at said city of Brooklyn, as early as 1869; and that the said pavements were made and used by all of the said parties long anterior to the time, which it is alleged the said John J. Schillinger invented the same.

And this respondent, further answering, says that he is informed and believes it to be true that the said pavement or substantially the same was known and used prior to the time it is alleged to have been invented by said John J. Schillinger by other parties, whose names are not now known to this respondent, but which will be

added hereto as soon as ascertained if leave of court can be obtained.

And this respondent, further answering, says on information and belief that long before the said John J. Schillinger applied for his said original letters patent that he, in a conversation one day with George L. Schmidt and Julius Hopke, both then and now residing in the city, county, and State of New York, did insist that in
16 laying concrete pavements the same should be laid in one continuous piece or part, and that said George L. Schmidt and Julius Hopke did tell said John J. Schillinger that the same should be laid in sections, and that thereafter the said John J. Schillinger did make application for and procure the said original letters patent in complainant's said bill mentioned, and did obtain it on the information obtained from said George L. Schmidt and Julius Hopke.

And this respondent, further answering, says on information and belief that the said alleged invention was in public use for more than two years before the said John J. Schillinger made any application for letters patent thereon.

And this respondent, further answering, says on information and belief that he never made, sold, or used, or caused to be made, sold, or used, any specimen of pavements alleged to be covered by said reissued letters patent in said bill mentioned, and likewise denies that he ever derived any profit from such making, selling, or using, and likewise denies that the complainant ever incurred any damages on account of any such transactions committed or caused to be committed by this respondent.

And this respondent, further answering, says that the pavement made by him is different in kind from that described and claimed in said reissued letters patent in said bill mentioned, and that he has not infringed upon the rights and privileges alleged in said bill to be secured to said John J. Schillinger and his assigns by said letters patent.

And this respondent, further answering, says on information and belief that the pavements, when laid in accordance with the said original and said reissued letters patents in said bill mentioned, are inoperative and impracticable, and that therefore the said letters patent is invalid.

In answer to the interrogatories propounded in said com-
17 plainant's said bill this respondent says:

1st. That he admits it to be true that said original letters patent for an alleged improvement in concrete pavements were issued to the said John J. Schillinger.

2nd. This respondent denies that at any time since the 27th day of May, 1879, within the city of St. Louis or county of St. Louis or elsewhere, he did make, use, or sell or cause to be made, used, or sold any concrete pavements constructed in accordance with or upon the principles or process described in said reissued letters patent.

Therefore this respondent humbly submits and insists that under the facts and circumstances as above alleged the said complainant

has no right to any further or other answer to said bill or any part thereof than is above given, and no right of injunction, account, and relief prayed for in said bill of complaint, and he therefore asks to be hence dismissed with his reasonable costs and charges in this behalf most wrongfully sustained.

PRESTON M. BRUNER.

GEO. H. KNIGHT,
Att'y for Bruner.
F. N. JUDSON,
Of Counsel.

STATE OF MISSOURI, }
City of St. Louis, } *ss:*

On this third day of May, 1886, before me personally appeared Preston M. Bruner and made oath that he has read the foregoing answer and knows the contents thereof, and that the same is true of his own knowledge except as to the matters which are therein admitted or stated to be based on information and belief, and as to those matters he believes it to be true.

A. P. SELBY, *Clerk.*

18 And afterwards, to wit, on the seventh day of June, A. D. 1886, there was filed in said cause a replication in words and figures following, to wit:

(*Replication.*)

Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON }
vs. } In Equity. #2650.
PRESTON M. BRUNER. }

This repliant, saving and reserving unto himself all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto saith that he will aver and prove his said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant; without this, that any other matter or thing whatsoever in the said answer contained material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver and prove as this honorable court shall direct, and humbly prays as in and by his said bill he hath already prayed.

ALEX. YOUNG,
ALBERT BLAIR,
Solicitors for Complainant.

And afterwards, to wit, on the fourteenth day of December, A. D. 1886, there was filed in said cause a stipulation in words and figures following, to wit:

(*Stipulation.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

19 WILLIAM SHANNON, Complainant, *vs.* PRESTON M. BRUNER, Respondent. } In Equity.

It is hereby stipulated by the parties to the above cause that the depositions of Peter Trebel and Charles Monkhouse, taken on behalf of the complainant on the 21st day of June, 1886, before Enrique Palmer, Esq., a notary public in and for the city of St. Louis, State of Missouri, may be filed in said cause on or before the 20th day of December, 1886, and read at the hearing of said cause with same effect as if filed within the time prescribed by the rules of court.

And it is further stipulated that the assignment of John J. Schillinger, the patentee of reissued letters patent of the United States No. 4364, to J. L. & A. Hull of his exclusive right and interest in his said letters patent for the city of St. Louis, State of Missouri, bearing date of the 27th day of May, 1879, hereto annexed, and the assignment of J. L. & A. Hull of the same right and interest for said city, bearing date the fifth day of March, 1886, hereto annexed, to the complainant may be filed in said cause, subject to objection by counsel for the respondent on the ground of incompetency and on the ground of it being insufficient to show title in complainant.

It is further stipulated and agreed that the respondent may have until the first day of March, 1887, to close his testimony, and that the complainant may have until the first day of April, 1887, in which to close his rebutting testimony.

ALBERT BLAIR,
For Compl't.
GEO. H. KNIGHT,
Att'y for D'f't.

Said assignments above referred to are in words and figures
20 following, to wit:

(*Assignments.*)

Whereas letters patent of the United States for improvement in concrete pavements, dated May 2nd, 1871, and numbered 4364 of reissue letters patent, were granted to John J. Schillinger, of the city, county, and State of New York; and

Whereas J. L. and A. Hull, of the city and county of St. Louis, State of Missouri, are desirous of acquiring the sole and exclusive right and interest under and by virtue of said letters patent for, to, and in the city and county of St. Louis, the said sole and exclusive right now being in said John J. Schillinger, of New York:

Now, for and in consideration of the sum of three thousand dollars ($3,000), the receipt whereof is hereby acknowledged, I, the said

John J. Schillinger, do hereby grant and convey unto the said J. L. and A. Hull all my right, title, and interest in and to said letters patent for, to, and in the said city and county of St. Louis, State of Missouri, and in no other place or places, subject, however, to a disclaimer filed by me at the office of the Commissioner of Patents on the 9th day of March, 1875.

The foregoing grant is made upon the following express conditions and stipulations, a wilful infraction of any of which by the said grantee, their heirs, assigns, or licensees, shall work a forfeiture to the said Schillinger, his heirs and assigns, of all rights, titles, and privileges under or relating to said letters patent for, to, and in the territory specified, possessed by the person or person- guilty of such infraction; such conditions are as follows, to wit:

I. The said John J. Schillinger reserve- the right to lay his pavement on Counsilman building, cor. 5th and Olive St., in city of St. Louis.

II. Said L. J. and A. Hull, their heirs, assigns, and
21 licensees, shall stamp or otherwise fix, in a legible and durable manner, in all said pavements laid by them or any of them the words "John J. Schillinger, patented July 19th, 1870; reissue May 2nd, 1871."

III. In order that the standard and just reputation of the said patented pavement shall be maintained the said L. J. and A. Hull, their heirs, assigns, and licensees, shall lay all said pavements in a substantial, workmanlike manner.

IV. Upon failure the said L. J. and A. Hull are hereby authorized to collect all royalties from pavements laid under license granted by J. J. S. after this date. All previous license- are hereby revoked; also that the said L. J. and A. Hull are hereby released from all liabilities on account of any infringements upon the patent right in the city and county of St. Louis, Mo.

V. The said L. J. and A. Hull, their heirs, executors, administrators, and assigns, shall prosecute all infringements of said letters patent in the said city and county of St. Louis, State of Missouri, and shall defend all suits against them or any of them involving the validity of said letters patent at their own expense and unless the parties infringing agree to cease infringing without suit.

In witness whereof the said parties have hereunto set their hands and seals this twenty-seventh day of May, A. D. one thousand eight hundred and seventy-nine.

JOHN J. SCHILLINGER.

Witness:
J. WEIDENMAN.

In consideration of the sum of two hundred dollars to us in hand paid, the receipt whereof is hereby acknowledged, we, the undersigned, J. L. and A. Hull, do hereby sell, assign, transfer,
22 and convey to William Shannon all our right, title, and interest in the foregoing conveyance of John J. Schillinger to us and all our interest in the right to use the letters patent in said conveyance referred to and mentioned, and for the same considera-

tion we also sell, assign, transfer, and convey to said William Shannon all our claims arising under said conveyance to recover royalties or damages from any and all persons for infringing said letters patent, giving and granting to them the right to sue for and recover the same; the rights and interests hereby conveyed on all our rights under said patents for the full life thereof.

In witness whereof we have hereunto set our hands and seals this the 5th day of March, 1886.

J. L. HULL. [SEAL.]
ALONZO HULL. [SEAL.]

Witnesses to J. L. Hull's S.:
L. J. NORTHUP.
Witnesses to signature of Alonzo Hull:
A. C. STEWART.

Depositions for Complainant.

In the United States Circuit Court for the Eastern District of Missouri.

WILLIAM SHANNON, Plaintiff,
vs.
PRESTON M. BRUNER, Defendant.

Be it remembered that on the 21st day of June, 1886, before me, Enrique Parmer, a notary public within and for the city of St. Louis and State of Missouri, at the office of Alex. Young,
23 N. W. corner of 5th & Market streets, in the city of St. Louis, Missouri, at the hour of 2 p. m. of that day, were produced and personally came before me Peter Trebel and Charles Monkhouse, witnesses in behalf of the plaintiff, in pursuance of agreement (service of notice waived), to depose in a civil cause depending in the circuit court of the United States for the eastern district of Missouri, held at St. Louis, in said district, wherein William Shannon is plaintiff and Preston M. Bruner is defendant; and the said Peter Trebel and Charles Monkhouse, being of lawful age and of sound mind and being by me first carefully examined, cautioned, and duly sworn on their respective corporal oaths to testify the whole truth touching the matter in controversy in said cause, respectively depose and say as follows:

PETER TREBEL, of lawful age, being produced, sworn, and examined on the part of the complainant, deposeth and saith:

Direct examination by ALBERT BLAIR, Esq.:

Q. State your name, residence, and occupation.

A. My name is Peter Trebel; I live — 2315 Cass avenue, and I am in the cement business.

Q. How long have you resided in this city?

A. I have been in the city twenty years, and have been in the cement business pretty nearly that time.

Q. How many years?
A. About twenty years.
Q. Do you know the parties to this suit?
A. Yes, sir.
Q. How long have you known Mr. Bruner?
A. I don't know; I couldn't say for sure; about fourteen or fifteen years, I think.
Q. Where does Mr. Bruner live—what city?
A. He lived in Carondelet and worked in the iron works, then he came up here to the St. Louis Tiling Company and bought some shares.
Q. What was his business?
A. Cement business.
24 Q. What was his business at that time?
A. He put down cement-work.
Q. What was his business when you first knew him?
A. That was his business when I first knew him.
Q. What is his business now?
A. The same thing.
Q. Cement-work?
A. Yes, sir.
Q. What kind of cement-work?
A. Putting down sidewalks and floors and cement-work for any kind of purpose.
Q. Does he do this work for himself or for other people?
A. For other people. He is a contractor.
Q. He puts down sidewalks for other people?
A. Yes, sir.
Q. Has he done much of that work in the city of St. Louis?
A. Yes, sir.
Q. State whether you ever worked for Mr. Bruner or not.
A. Yes, sir; I have worked for him. I was foreman for him. Mr. Bruner used to get men to do the work and he knew nothing about it. He is the contractor.
Q. When did you first work for him?
A. I couldn't tell you that.
Q. About how long ago?
A. I couldn't tell exactly. I started to work for him at the time the sidewalk was laid at Pope's theatre.
Q. About how long ago is that?
A. I don't know.
Q. Did you work for him in 1885?
A. Oh yes.
Q. Did you work for him in 1884?
A. I worked for him in 1885, 1884, and 1883. I quit him two years, and during that time I worked for myself and Mr. Bishop.
Q. Did you work for Mr. Bruner in 1883?
A. Yes, sir. I don't know when I started, but of course I could find out. I stopped two years and then I worked for him again.
Q. But for two years you did not work for him?
A. Yes, sir.

25 Q. And then you worked for him again after those two years?
A. Yes, sir; I work- for him in 1884.
Q. What did you do for him—what kind of work did you do?
A. I put down sidewalks or any kind of walks.
Q. What kind of walks were they?
A. Granite and flagstone.
Q. Did you make any concrete pavement?
A. Yes, sir—that is, concrete pavement. Flagstone composition is concrete pavement.
Q. Where did you put down concrete pavement in the city of St. Louis—what places?
A. Well, that is hard to tell now. I put it down all over the city, here and there.
Q. At many places?
A. Well, I think all over the city.
Q. Who did you do it for—who were you working for?
A. Mr. Bruner.
Q. Was Mr. Bruner the contractor?
A. Yes, sir.
Q. Who was he doing it for?
A. For anybody who wanted it done; he did it for anybody.
Q. Was he doing it for the owners of the property?
A. Yes, sir; for the owners of the property.
Q. Do you know where Nugent's store is in the city of St. Louis?
A. Yes, sir.
Q. Where is it?
A. Between Franklin avenue and Morgan streets.
Q. What kind of pavement is there there?
A. Well, it is a granite; a flagstone composition; a concrete pavement.
Q. Is it a concrete pavement?
A. Yes, sir.
Q. Who laid that pavement?
A. Well, I put down the pavement and Mr. Bruner was the contractor—the boss.
Q. Mr. Bruner was the boss?
A. Yes, sir.
Q. Who directed you?
A. Mr. Bruner. I worked for him and did it at his order.
Q. How large a pavement is there there at Nugent's?
26 A. I didn't measure it. It was about fifty feet front, I believe.
Q. How wide is it?
A. Twelve feet, I believe. I think it is twelve feet broad and about fifty feet front. There are four stores there.
Q. Describe carefully and slowly how that pavement is made.
A. The pavement is made like any other kind that I ever laid—first, the foundation is made with cinders.
Q. How much foundation would you make of cinders?
A. Generally a foot deep of cinders.

Q. What would you put on top of the cinders?

A. After I got the foundation laid then I laid the scantlings on for the blocks.

Q. What sized blocks?

A. 6 x 3 or 3 x 6. It depends. If it is twelve feet I make two blocks between the building and the street.

Q. And your blocks are six feet?

A. Yes, sir.

Q. How wide are they? They are six feet long and how wide are they?

A. Six feet long and four or five or six feet wide. It is not even everywhere.

Q. After you have the foundation made with cinders what do you do next?

A. I lay the scantlings of about four inches or three inches on top of the cinders.

Q. What are those scantlings for?

A. To make the blocks.

Q. Do you mean to say that they become the frame of the block?

A. Yes, sir.

Q. After you have the scantling put down so as to frame a block the size desired what do you do then?

A. After the scantling is down then I put the concrete in and fill it up to within about one-half or three-fourths inches from the top.

Q. You fill this frame to within one-half inches from the top?

A. Yes, sir.

27 Q. That is, one-half or three-fourths of an inch below the scantling?

A. Yes, sir; of course the finish has to go on to make it level with the scantling.

Q. Of what is this lower layer of concrete made? You say it is concrete. Now, what composes that concrete?

A. Sand and cement.

Q. The lower layer is made of rough material?

A. Yes, sir; but of course the top is put on to finish it.

Q. How thick is this lower layer?

A. Sometimes three inches, sometimes four inches, and sometimes 2½ inches; it is not exactly uniform every time.

Q. The second layer—how do you make that?

A. That is the finish.

Q. What is that made of?

A. Out of cement and sand; one part of cement and one part of sand.

Q. That is spread over the lower layer?

A. Yes, sir; and level with the top of the scantling.

Q. After you have one block formed in that way what do you then do?

A. Finish it and take the scantling back from it and make another block.

Q. You move the scantling back?

A. Yes, sir; and make another block.

Q. Of what size?

A. Of the same size sometimes and sometimes it is a different size; it makes no difference about that.

Q. The scantling is placed upon the foundation of cinders?

A. Yes, sir.

Q. After you have moved your scantling frame for the next block, what next do you do?

A. Well, I generally get sand, paper, or wood and put against the soft block and fill it with concrete. You have to put something against it—sand, paper, or wood.

28 Q. When you move the scantling frame from the edge of the block that you have just below, does the edge of the block retain its form or does it break down—flow down?

A. It don't fall down. If it fell down we would have to fix it up again. It holds by itself.

Q. Is it set sufficiently to hold its form?

A. Oh, yes; it stays that way.

Q. Then, before you put concrete into your second block you say that you put something against the edge?

A. Yes, sir; against the edge.

Q. What is it that you put there?

A. Generally sand or paper or wood. It is to keep them separated.

Q. How much do you put there?

A. We just keep them separated; that is all.

Q. What kind of paper do you use?

A. Any kind of paper. Sometimes a dark paper and sometimes a blue paper or anything.

Q. And sometimes sand?

A. I generally use sand pretty nearly every time.

Q. Now, after you put the first layer of concrete in the second block, what do you do then?

A. Well, I do just like the first and finish it, and then I take the trowel and make the two blocks join—separate the two blocks.

Q. What necessity is there for separating the two blocks, if you have paper there?

A. If the blocks were dry they would hold together, and you have got to cut it with a trowel to get a nice straight joint.

Q. When you have completed the second block can you see the line of division between the first and second block?

A. No, sir.

Q. Why not?

A. I finish those two together.

Q. Smooth it even?

A. Yes, sir; I put a pencil mark on the scantling and cut right straight through according to that pencil mark.

29 Q. When you use paper can you see the paper after it is finished?

A. No, sir; you cannot see it.

Q. Why not?

A. I don't want to see the paper; it would be a bad finish if I put

the paper up so you could see it. I put the paper on to keep the blocks separated.

Q. How high up does the paper come?

A. It comes about one-fourth of an inch from the top.

Q. When you make the soft finish the edge of the paper is covered over, is it not?

A. Yes, sir.

Q. Is that true when you use a wooden strip?

A. It is the same way.

Q. Then, after you put on the top stuff, you say that you take a trowel?

A. Yes, sir.

Q. How do you know where to cut it?

A. I have a pencil mark on every scantling. I put a pencil mark — before I fill it in, and I cut it by the pencil mark and joint it at the same time.

Q. When you have completed the second block you proceed with the next in order?

A. Yes, sir; at the same time I go ahead until I get done.

Q. And you make a division between the second block and the third in a similar manner?

A. The division has got to be made every time. If I don't make the division of course it comes together and cracks.

Q. What makes it crack?

A. Well, the cement dries in, and if the blocks are not separated it has got to crack some place.

Q. Do they come together or shrink apart?

A. They shrink apart, of course.

Q. Now, state the advantage of building it in that way. Why don't you put the entire sidewalk down in one continuous sheet?

A. Well, it could be done.

Q. What would be the objection to it?

30 A. It would crack; it would crack in every kind of direction.

Q. Crack irregularly everywhere?

A. Yes, sir; it would have to do it.

Q. It is built in blocks, then, to prevent cracking?

A. Yes, sir; that is the reason we make it that way; we have to keep the block separated.

Q. In making these division lines you use tar paper, brown paper, or sand?

A. Yes, sir; that is what I use. If you put sand in good it separates it all right. It has got to be put in well.

Q. How do you put in sand?

A. With a trowel. I plaster the edge of the block after I have done with the sand.

Q. The object is to prevent the second block from adhering to it, is it not?

A. Yes, sir.

Q. So that a thin layer of sand would prevent them uniting; is that the idea?

A. Yes, sir; that is the fact.

Q. And the top finish you say joins, but you cut it with a trowel?

A. Yes, sir.

Q. You cut it above the sand or the paper that lies beneath?

A. Yes, sir; cut the top down to the partition between the blocks.

Q. In building this pavement in front of Nugent's what did you use for the division of blocks?

A. By Nugent's I used three or four kinds of partitions, I believe. I made some with thick blue paper and tar paper, wood, and sand.

Q. Did you use blue paper?

A. Yes, sir; it looks like a tarred paper.

Q. You used some blue paper that looked like tar paper?

A. Yes, sir.

Q. And you used sand sometimes?

A. Yes, sir; and some wood. Mr. Bruner brought some wood material there and it was a little too thick and he had it cut then.

31 Q. How thick was that wood strip?

A. About one-half an inch thick.

Q. So you think in Nugent's work you used that?

A. I used everything.

Q. You used tar paper?

A. Yes, sir; blue paper and sand; I plastered the block with the sand and put the paper or wood or anything I had against it.

Q. Did Mr. Bruner provide the material that you used?

A. Yes, sir; I put it there by his order.

Q. Where did you get the tarred paper?

A. Mr. Bruner brought the paper and wood and I had lots of sand there also; I put it down on his order.

Q. You were working under his orders?

A. Yes, sir; I worked for Mr. Bruner.

Q. Did he ever tell you to use any one of these articles?

A. Of course I had to use them, for he gave me the order.

Q. Was he present any time during the work?

A. Yes, sir; his order was that I should keep the blocks separated, and I did so.

Q. Did he see you using the tarred paper?

A. Of course; he put it down himself sometimes.

Q. Did he see you use the sand?

A. Oh, yes; he watched me, and I had to do it.

Q. Did he see you divide the blocks with the trowel after you had made the hard finish?

A. Yes, sir; sometimes he cut it himself; it was his order that I should keep the blocks separated, and whatever he ordered had to be done.

Q. Where else did you build pavements that summer?

A. Oh, I don't know; all over the city.

Q. Did you construct any at Mr. Tiernan's?

A. I couldn't tell; do you mean——

Q. (Interrupting.) I don't know where it is myself. Was
32 there any work done at Chatman's?

A. Yes, sir.
Q. Where is Chatman's place?
A. I believe it is on Cook avenue.
Q. How much was done at Chatman's?
A. I don't know; I didn't measure.
Q. How many feet front is there there?
A. I don't know; there are about three houses there, I believe.
Q. Was that work at Chatman's done by Mr. Bruner?
A. Yes, sir.
Q. Were you working for Bruner at that time?
A. Yes, sir.
Q. How is that work built?
A. In the same way as the rest. I think I used all sand there, but I am not sure.
Q. What sized blocks did you use?
A. 6 x 6; some are bigger in front of the door.
Q. How are the blocks divided?
A. Every one of the blocks were divided the same as those in front of Nugent's.
Q. Was Mr. Bruner present?
A. Of course; it was done on his orders.
Q. Do you know whether there was any work done for Thomas?
A. Yes, sir.
Q. Where is Thomas's place?
A. I don't know.
Q. What part of the city?
A. The west part of the city.
Q. How much was done there?
A. I don't know; I didn't measure it.
Q. Was it one lot or two lots?
A. I don't know.
Q. Do you think there was as much as one lot done there?
A. I think so.
Q. The pavement in front of one lot?
A. I don't know; I couldn't tell you for sure; of course, I would have to see first. I didn't measure the walks that I put down.
Q. How was that in front of Thomas's built?
A. I didn't use wood there, I think.
Q. Did you use wood, sand, or paper?
33 A. I couldn't tell you. I don't believe I did use wood there; at that time we didn't use wood at all, I think.
Q. Did you use sand?
A. If we didn't use wood we used sand.
Q. Did you use any paper there?
A. I don't know.
Q. You don't know whether you used paper or not?
A. I do not.
Q. Did you divide the blocks?
A. Yes, sir; it was my order to divide the blocks on every order.
Q. You divided the blocks either by sand, wood, or paper?
A. Yes, sir.

Q. And finished with the trowel by dividing the top layer?
A. Yes, sir.
Q. What other workman assisted you?
A. Sometimes this one; sometimes another one.
Q. Do you know Mr. Monkhouse?
A. Yes, sir.
Q. Did he help you in these jobs?
A. Yes, sir.
Q. Did you ever have any conversation with Mr. Bruner about this Schillinger patent?
A. Yes, sir; we have had several conversations about it.
Q. What did Mr. Bruner say on any such occasions—can you remember anything that he ever said?
A. Well, he thought I was a fool to pay Mr. Hull a royalty for the use of them.
Q. Who is Mr. Hull?
A. A man here.
Q. Mr. Hull, you understood, had a right to use Schillinger patent?
A. Yes, sir.
Q. Did you say that you got the right to build pavements under that patent?
A. Yes, sir.
Q. Did you buy the right from Hull?
A. I did not buy the right. I got the privilege from Mr. Hull to lay pavements.
Q. And you paid him for it?
A. Yes, sir.
Q. Was that when you were working for Bruner or yourself?
A. No, sir; I was working for another man at that time—Mr. Bishop.
34 Q. Were you working for Bruner at that time?
A. No, sir.
Q. You were not working for Mr. Bruner when you used the Schillinger patent?
A. No, sir.
Q. What did Mr. Bruner say about your getting the right from Hull to use the Schillinger patent?
A. He laughed at me and sais that I was a fool to do it; and I said, "How?" And he said, "Well, you know that you can go around the Schillinger patent in any direction."
Q. What did he mean by that?
A. I don't know; I didn't talk any further; I don't know what he meant by it.
Q. Did he ever say anything about the kind of paper that he wanted you to use before this time or after this time—hear him make any remarks about using tarred paper, blue paper, or any other kind of paper?
A. He didn't like tarred paper at all; he would sooner have blue paper.

Q. He said at one time, did he, that he preferred that you should use the blue paper?

A. Yes, sir; that is what he wanted.

Q. What did he say?

A. Well, he wanted me to use it, of course, and I had to use it.

Q. Did you use the blue paper then?

A. I used the blue paper, tar paper, wood, or anything I got hold of as long as I worked for Mr. Bruner. I got orders to separate the blocks, and I did, too.

Q. Did Mr. Bruner, so far as you know, ever have the right to use the Schillinger patent?

A. He didn't tell me anything about the patent.

Q. Do you know whether he ever tried to get the Schillinger patent?

A. No, sir; I know nothing about that; he only told me that he could go around the Schillinger patent.

Q. Do you know whether he ever went to New York to try to get the Schillinger patent?

35 A. I don't know. He went to New York, but I couldn't swear that he went there about the patent. I know that he was in New York, and that is all I know about it.

Q. Do you know that he was in New York?

A. He told me that he was going to New York.

Q. He told you that he had been to New York?

A. Yes, sir.

Q. Did he say what for?

A. Well, he may have done so, but I couldn't say; he didn't tell me that I know of what he went there for so I could tell you.

Q. After he came back did he say anything about the Schillinger patent, in reference to his business in New York?

A. Yes, sir; he talked to me about the Schillinger patent after he came back; he said that he could go around the Schillinger patent at any time.

Q. That is what he said after he had been to New York?

A. Yes, sir.

Q. What makes you think that he had tried to buy the Schillinger patent in New York?

A. I didn't think so.

Cross-examination by Mr. KNIGHT:

Q. When did Mr. Bruner talk to you about the Schillinger patent?

A. Oh, we talked a great many times about it; Mr. Bruner talked to me a hundred times about the Schillinger patent; we had a good deal of talk about it.

Q. When was it?

A. Well, I couldn't tell you; it was during the time I worked for him; Schillinger's patent was just on the road and it gave us a chance to talk about it.

Q. When did Mr. Bruner go to New York?

A. I don't know when he went; he was in New York; that is what he told me.

Q. When?

A. I couldn't tell you when it was, but I worked for him at that time.

Q. If you cannot tell when he talked to you about the Schil-
36 linger patent and you don't know when he was in New York, how do you know that he talked to you about the Schillinger patent when he came back from New York?

A. We talked about it a thousand times before he went to New York and after he came back. He said to me, "You are a fool to pay money to Hull. You can go around Schillinger's patent at any time."

Q. Is that all he said about it?

A. That is all.

Q. Was that before or after he came back from New York?

A. I couldn't tell you that.

Q. You don't know?

A. No, sir.

Q. You say you got orders from Bruner to put something between the blocks?

A. Yes, sir; that was my orders.

Q. And I believe you said that you put anything between that you could get hold of?

A. Well, if I hadn't paper I would put sand between or wood; put sand, paper, or anything that I have there. Sometimes I haven't everything there.

Q. You just took hold of anything that you could get?

A. I went by his orders. I had to separate the blocks. That was one of his orders.

Q. You stated in your direct examination, did you not, that you put anything between the blocks that you could get hold of?

A. Of course, I had to get——

Q. (Interrupting.) Where did you get your paper?

A. Sometimes I took paper around the building. There is lots of paper around a new building generally, but I used mostly sand. You will see in this work of Nugent's that the wood swells and makes a big joint. I don't expect that Bruner used the wood afterwards.

Q. Where did you get your tar paper when you got any?

A. Mr. Bruner went and got it if he hadn't got any.

Q. Are you willing to swear that he ever used tarred paper at all?

A. Yes, sir.

Q. Will you swear to it?

A. Yes, sir; I will.

37 Q. Where did you get it?

A. Mr. Bruner brought it or I got it in the shop; I used a good deal of tarred paper in Bruner's work; if I hadn't tar paper I would take something else to separate the blocks; I had to have

something to separate the blocks, as that was my order; if I got this thing I used it and if I didn't I used another thing.

Q. Do you know, as a matter of fact, whether they put tarred paper in cement barrels to keep the dampness out?

A. I haven't seen any tarred paper in cement barrels.

Q. You never saw any?

A. No, sir; I believe I never did in my life.

Q. Are you willing to swear that Mr. Bruner ever told you to use tarred paper?

A. I could swear that he put it down; we didn't use as much tar paper as blue paper; Bruner never liked to use tar paper; I don't know why.

Q. How did you come to use it then?

A. It was my orders; Mr. Bruner put it down himself in many jobs.

Q. Are you sure the paper was tarred?

A. Of course I am sure.

Q. You say that you got the right from Hull to use this Schillinger patent?

A. Yes, sir; for two years. I left Mr. Bruner for two years and I got Schillinger's patent. After the two years was expired I went with Bruner again and worked for him. Then he told me that I was a fool to use the Schillinger patent; he said, "You can go around the Schillinger patent any day."

Q. What did you pay for it?

A. Two cents a foot—so much a foot.

Q. How much tarred paper did you lay for yourself?

A. I couldn't tell you how much—a good deal.

Q. You say that you used it for two years?

A. Yes, sir.

Q. Didn't you use anything else during that time?

A. What do you mean?

38 Q. Did you use anything else during those two years between the blocks?

A. Of course, I could use anything else. I used tarred paper, sand, and anything else. I have a right to do it. I had to separate the joints, and I could put anything between the joints that I pleased. I used very little tarred paper. Sand separates the blocks just as well as tarred paper.

Q. Did you use sand when you used tarred paper or wood?

A. Sometimes I did with big blocks. I plastered the blocks with sand, and then put paper against them.

Q. What for?

A. So it would get separated.

Q. Can you swear that you used the sand when you used the tar paper?

A. I can swear that I used sand and tarred paper in several jobs.

Q. Can you swear that you used sand and tarred paper on the same job between two pieces of stone?

A. Yes, sir.

Q. Used them both together?

A. Yes, sir; I can take the work up and show it to you.

Q. Where is that work?

A. On Morgan and Garrison avenue. You can see the tarred paper and sand in every block.

Q. Who did you do that work for?

A. I can't tell you the name. It is right on the southwest corner. I used tarred paper and sand there.

Q. What I mean to ask you is this: Whether or not you used sand and tarred paper between the same two pieces, used them both together, or did you use sand between the two pieces and tarred paper between the two pieces?

A. I told you that I used sand and tarred paper in the same piece. I plastered with sand and put the tar paper right next to it.

Q. When did you do that?

A. A great many times. Mr. Bruner himself laid it the same way I did.

Q. You say that you can take up those blocks and show
39 us the tarred paper now?

A. Yes, sir.

Q. Did you ever notice whether these blocks cracked or not?

A. Well, some of them cracked; if you laid them solid together they are bound to crack, sure.

Q. Did you ever see the blocks crack where you put tar paper between them?

A. Oh, a good many of them has cracked; the paper has nothing to do with the blocks cracking. If you don't separate the blocks they are bound to crack when frost gets in them.

Q. I am talking about pavements where the blocks are separated with tar paper. Did you ever see the stones of those blocks crack?

A. Yes, sir; of course, if you put bad stuff in or anything of that kind, or your foundation is not deep enough, the frost gets in and cracks it. Under those circumstances it would break marble or anything.

Q. Then they crack when tar paper is between them?

A. Yes, sir; I don't care what is between them if they are not made right. If you have got good concrete and a good foundation they won't crack if they are separated.

Q. Didn't you ever see them crack where there was a good job done?

A. If there was a good foundation and no other trouble they don't crack if they are separated.

Q. They don't crack then?

A. No, sir; if you do a good job they won't crack; if there is a bad foundation the frost cracks them.

Q. Was the tarred paper between these blocks that you speak of being cracked?

A. That don't make any difference; if the blocks are separated and have a good foundation they won't crack.

Q. Did you ever see them crack where there was a piece of wood placed between them?

A. I have seen wood swell up and make a big joint like that at Nugent's. I told Bruner right off that wood was a bad thing.
40 You can see that the wood swells up and makes a big joint. I don't expect that Bruner puts it down any more.

Q. Did you ever see blocks crack where there was wood between them?

A. I believe I saw one up here on Market street. I put down a couple of blocks there and another man put some down on the other side of the street, and one of the blocks that he put down cracked right in the middle—that is, on 10th and Market. I put a job down for Bruner on 12th street, and two years ago he came to me and said that the frost had raised the whole pavement there two inches higher than the layer up and down, and that the blocks were not cracked; they were in the same position as they were originally. They were separated well there, and I put lots of sand between those joints, and you can see the blocks to-day.

Q. Was there any tarred paper between those blocks where they settled down again without cracking?

A. I believe there was paper between, but I couldn't say for certain. Sometimes I plastered with sand and put tarred paper between. I might have put some wood in, too. I couldn't swear to that.

Q. You couldn't swear that there was any tarred paper there?

A. I could not.

Q. Did you ever see blocks crack where wood was used between them?

A. I don't care what you put between the blocks. If you have not got a proper foundation and bad material is used and the frost gets under, it will crack.

Q. Now, just answer my question. Did or did not you ever see blocks crack where wood was put between them?

A. I*d* it was a good job and the blocks were separated the frost wouldn't hurt it.

(Question repeated.)

A. If the blocks are laid right and separated from each other and there is a good foundation they will not crack. If they are not separated they will break.

41 Q. You cannot swear, then, that you ever saw cracked blocks where wood was placed between them?

A. I have seen a good many jobs that I thought were good where the blocks were cracked.

Q. What did you put between the blocks in those cases?

A. I used sand and paper between the blocks.

Q. What is the object in making marks through the finish corresponding to the divisions beneath the finish?

A. I have to separate the blocks.

Q. Suppose the cut in the finish does not correspond with the cut beneath. What is the result?

A. It will crack some place else and it makes a bad joint. We have got to mark so we can cut in the same joint.

Redirect examination by Mr. BLAIR:

Q. Was all of this work done in the city of St. Louis?
A. Yes, sir.
Q. How many jobs in all do you think you did for Mr. Bruner?
A. I don't know. I didn't count them.
Q. About how many?
A. I couldn't tell you about how many, either. I couldn't tell you for sure how long I worked for Bruner. I never put any of the jobs down in a book.
Q. Were there more than five?
A. I expect so—you mean five hundred?
Q. How many?
A. You might say 5,000. Mr. Bruner can tell you. Sometimes I did as many as five jobs in a week. Mr. Bruner can tell you how many jobs I have done for him.

Recross-examination by Mr. KNIGHT:

Q. You cannot state how many jobs you did at all for Bruner?
A. I didn't count them. I worked for him a good many years.
Q. Well, about how many jobs?
A. I couldn't tell you.
Q. You couldn't tell whether it was five or five hundred?
42 A. No, sir; there were more than five hundred. I might have done five hundred in six months.
Q. You say that you might have done five hundred jobs in six months.
A. Yes, sir.
Q. Are you willing to swear that you did more than five hundred for him altogether?
A. Mr. Bruner keeps a book and he can tell you. Some weeks I put down fourteen or fifteen jobs and in some cases I was three weeks on one job.
Q. What is your best opinion; did you do five hundred jobs or not?
A. I done more than five hundred jobs for Mr. Bruner.
Q. You did more than that.
A. I think I did as many as 5,000 jobs. I might have done a couple of hundred in a month or might have staid on one job two or three months. I know in many cases I did three jobs in one day. Mr. Bruner could tell you exactly how many I did.

Deposition of CHARLES MONKHOUSE, produced, sworn, and examined on behalf of complainant.

Direct examination by ALBERT BLAIR, Esq.:

Q. State your name, residence, and occupation.
A. My name is Charles Monkhouse, I reside at 1230 North 3d street in this city, and I am a helper in cement.
Q. Do you know Mr. Bruner?
A. Yes, sir.

Q. Do you know Mr. Trebel?
A. Yes, sir.
Q. Do you know of any jobs of pavement that Mr. Bruner did?
A. I know a few jobs. Do you mean the ones I worked on myself?
A. Yes, sir.
A. I worked on a job at Nugent's and on the Thomas and Chatman jobs.
Q. Whose contract was that?
A. Mr. Bruner's, I believe.
43 Q. You worked for Bruner?
A. Yes, sir.
Q. Who was Bruner's foreman?
A. Mr. Trebel.
Q. What is your business?
A. I am helper for Mr. Trebel.
Q. Did you say that you helped put down the pavement in front of Nugent's?
A. Yes, sir.
Q. Where is Nugent's?
A. On 5th street—Broadway as they call it now—between Franklin avenue and Morgan street.
Q. In the city of St. Louis?
A. Yes, sir.
Q. How much work was put down at Nugent's?
A. I couldn't say exactly; I never measured it; it was not my work at all. I know there are four stores there, and it ran from the store to the curbstone.
Q. How wide is the pavement?
A. I can't say as to that, sir.
Q. You say that you also worked at Chapman's?
A. Yes, sir.
Q. Where is that?
A. Chatman's is on Cook avenue.
Q. How much work was done there?
A. I couldn't say that, either. I know there were two lots done. I never measured it.
Q. How long is it?
A. Two lots in length.
Q. About how much is that, in your opinion?
A. I couldn't swear to that, sir.
Q. As much as fifty feet?
A. It may be fifty feet and it may be more; I couldn't say.
Q. Is it as wide as six feet?
A. I couldn't say that, sir.
Q. Is it as much as three feet wide?
A. Yes, sir; it is three feet wide.
Q. Do you think it is more than three feet wide?
A. It may be more than that. I couldn't exactly say as to the width of the sidewalk.
Q. Was the Chapman job also a contract of Bruner's?

A. I believe so.
Q. Do you know so?
A. Well, I worked for him there.
44 Q. You worked for Bruner there?
A. Yes, sir.
Q. And you also worked on the Thomas job. Where is Thomas's?
A. Thomas's is on Baker avenue.
Q. How much was done there?
A. There was sidewalks put down for three houses there—three lots.
Q. A sidewalk in front of three lots?
A. Yes, sir; three houses.
Q. Was there as much as fifty feet done there?
A. I guess there was more than that.
Q. You think there was more than that?
A. Yes, sir.
Q. How wide is it there?
A. I couldn't say the width of it there.
Q. Was it as much as three feet?
A. Yes, sir; it was three feet wide.
Q. Do you know of any other jobs done by Mr. Bruner?
A. Yes, sir; I believe I worked on Tiernan's house on Franklin avenue.
Q. How much was done there?
A. I couldn't state the amount there, either; it was not my business to measure it.
Q. How many lots?
A. There was one house there. I don't know whether it is one or two lots.
Q. Is there a side yard to the place?
A. There is a side lawn, I believe.
Q. Do you think there is as much as fifty feet up there in length?
A. I can't say.
Q. How wide is it?
A. I couldn't say the width of it.
Q. Is it more or less than three feet?
A. It may be three feet and it may be more. I couldn't say.
Q. Is it as wide as one foot?
A. Yes, sir.
Q. Is it as wide as two feet?
A. Yes, sir.
Q. What year was it that this was done?
A. In 1884; that was the only year I worked for Bruner.
45 Q. What part of the year was it?
A. I started to work somewhere around the 1st of June and I worked up until about the 1st of October, and it was during that time that I worked there.
Q. What kind of paving was this—how was it made?
A. It was made of granite, sand, and cement.
Q. Now, describe carefully each step in the process—what you did first and then the next step.

A. To lay a sidewalk?

Q. Yes, sir; the kind of sidewalks that were built at these places?

A. Well, we come along and whatever sidewalk was there before we take up, then dig the foundation and put in the cinders. Then we ram down and lay our scantling on. The scantlings were laid down by the foreman. Then we put our concrete in there within about three-fourths of an inch or one-half of an inch from the top of the scantling. Then we would put on the top coat on there—right up level with the scantling.

Q. Then what next?

A. Then as soon as that was done the foreman would finish it. Then, of course, we would take out the scantling from the side and move it over to the next block. Then we would plaster that up with sand if the foreman put paper or sand or whatever he put in there, and then he would put in his next block the same way as the first block.

Q. After the top was done could you see the paper or sand?

A. No, sir; you could not see the paper or sand.

Q. Could you see the size of the block?

A. Certainly, sir; you could see the size of the block where the scantling was taken out. Between there would be a joint there.

Q. A joint cut?

A. Yes, sir.

Q. Why would they cut a joint there?

A. Cut a joint there so if it was frosty weather and raised up it wouldn't break; it would fall back again.

Q. Explain about the cutting of the joint.

46 A. Well, as soon as he would finish one block he would go over to the other and he would have his mark there and would cut through with a small trowel. He would cut a joint directly over the place where he put his paper or sand.

Q. So after he put on the top dressing and the top dressing of one block had joined that of another it covered over all signs of division between the two blocks?

A. Yes, sir; and then he would cut it afterwards.

Q. When it got hard?

A. No, sir; when it was soft.

Q. In this job of Nugent's, what was used to divide the blocks?

A. To the best of my knowledge, there was sand used and a kind of thick brown paper.

Q. Was there any tarred paper used at Nugent's?

A. I can't say that; I don't recollect of there being any tarred paper there at all.

Q. State whether there was any wood used there.

A. I don't recollect of any wood being used there.

Q. State whether they used sand.

A. Yes, sir; they used sand; sand was used between the joints; they call that plastering.

Q. Was there any paper used at Nugent's?

A. There was some of this thick brown paper used on some blocks, but I couldn't say what blocks now.

Q. When you used brown paper did you use wood?

A. I can't say; I never saw any wood at all while I was working with Mr. Bruner, that I recollect.

Q. How is the pavement made at Chatman's?

A. In the same way as at the other places; concrete was put in and joints cut in the same way.

Q. Was there any wood used at Chatman's?

A. No, sir; not to my knowledge.

Q. Was there any tarred paper used?

47 A. Well, I couldn't say about tarred paper. All I remember about is sand, because I know that sand was used on every sidewalk that I ever worked on.

Q. How was it at Tiernan's?

A. The same way as with the other sidewalks.

Q. How was it at Thomas's?

A. The same. I cannot remember of tarred paper or paper of any kind being used there.

Q. Was any of these walks built without dividing with the trowel?

A. No, sir.

Q. In every case, then, they divide the top dressing with the trowel to correspond with the division in the lower layer?

A. Yes, sir.

Q. Is that a fact?

A. Yes, sir; that is a fact.

Q. Was Mr. Bruner present all or part of the time when these improvements were made?

A. Do you mean when we were laying the blocks?

Q. Yes, sir.

A. Sometimes he was there and sometimes he was not.

Q. Who provided the material?

A. Generally Mr. Bruner did.

Q. He saw the work from time to time during its construction, did he not?

A. Yes, sir.

Q. Do you know anything about the work done at Bruce's, on Garrison avenue?

A. No, sir; I didn't work on that job.

Q. What is the object of dividing the blocks—dividing the pavement into blocks?

A. The object is this: In case there is a frost it is to keep it from cracking. If the frost gets in it and raises it up it will go back again to the same place if it is separated.

Q. What was the size of the blocks?

A. Various sizes. I can't exactly say what the size was there.

Q. About what size?

A. Some blocks were 6 x 6 and 5 x 6, and like that. It depends on how the gentleman wants it made.

48 Q. Of what was the lower layer composed?

A. Do you mean the bottom stuff?

Q. I don't mean the cinders, but the under layer of concrete.

A. Sand, cement, and granite, generally.
Q. Of what was the upper layer made?
A. The upper layer was made of sifted granite and cement.
Q. Now, in what proportions?
A. One part cement to one part granite.
Q. How thick was the upper layer?
A. It was just according to what the gentleman wanted. I believe it ranges from one-half to three-fourths of an inch.
Q. How thick was the under layer?
A. Sometimes it was four inches—three and one-half to four inches.
Q. Do you remember of seeing on a concrete pavement on Garrison avenue a bit of tarred paper sticking out between two rocks?
A. I saw a piece of paper sticking out. I couldn't say what kind of paper it was, but it was some kind of dark paper.
Q. Who did that work?
A. I don't know, sir.
Q. In all of this work that you speak of who did you say was the contractor?
A. Mr. Bruner.
Q. And you are employed by him?
A. Yes, sir.
Q. What was Mr. Trabel's position?
A. He was the foreman for Mr. Bruner.
Q. He was working for Bruner?
A. Yes, sir.
Q. All of this work was in what city?
A. In the city of St. Louis.
Q. About how many separate jobs of this kind of pavement did you work on while employed by Bruner?
A. It may be six or seven.
Q. Did you ever hear any discussion or reference to the Schillinger patent?
A. No, sir.

Q. Was Mr. Bruner ever present when you were making
49 the partitions between the blocks?

A. He may have been and may not have been. I can't say for certain whether he was there or not.
Q. Did he ever assist in doing the work?
A. Not to my knowledge.
Q. Was he ever present?
A. He may have been. I couldn't swear to it.
Q. Did you ever see him there?
A. See Mr. Bruner there when the foreman was cutting?
Q. When you were doing the work?
A. Yes, sir; when I was doing the work he was around there sometimes.
Q. How much time would he spend when he came there?
A. I couldn't say that, sir.
Q. Did he ever stay as much as half an hour?

A. He might have staid a half an hour and he might have staid longer. I couldn't tell.

Q. What is your best impression about it?

A. Sometimes Mr. Bruner would come, and you might see him when you were busy working and you couldn't tell how long he would be there and how long he would not be there.

Q. Who brought the material on the ground?

A. Mr. Bruner brought it sometimes and teams would bring it at other times. I couldn't state who was doing the hauling.

Q. Did Mr. Bruner have a team?

A. No, sir. He had a one-horse wagon, I believe.

Q. Did Mr. Bruner have a shop?

A. I believe he did have a shop; yes. sir.

Q. Where was the shop?

A. In the rear of 512 South Jefferson avenue.

Q. Were you ever at the shop?

A. Yes, sir; I have been at the place.

Q. Were you at the shop during that time?

A. Yes, sir.

50 Q. What was kept at the shop?

A. Tiles were there; that is about all I saw.

Q. Did he have any cement there?

A. He might have had and I not have seen it.

Q. Was there any sand there?

A. I couldn't say; when I was there I didn't stay any length of time; I would just go there and come away again.

Cross-examination by Mr. KNIGHT:

Q. Did you work along with Mr. Trebel?

A. Yes, sir.

Q. During the summer of 1884?

A. Yes, sir.

Q. Did you work on any particular part of the pavement or did you work on all parts of it?

A. I was just helping him.

Q. Whatever he told you to do?

A. Yes, sir.

Q. And you assisted him in all parts of it?

A. Yes, sir.

Q. Laying the foundations, putting down the concrete, etc.?

A. Yes, sir; anything at all that he told me to do.

CITY OF ST. LOUIS, } ss:
State of Missouri, }

I do hereby certify that the foregoing depositions of Peter Trebel and Charles Monkhouse were, when taken, then and there reduced to writing by me at the place in their behalf and time aforesaid in the presence of said deponents and by them respectively subscribed in my presence after having been so reduced to writing.

I further certify that I am not counsel nor attorney to either of

the parties in this suit nor interested in the event of this cause. I further certify that Albert Blair and Alexander Young appeared in behalf of the complainant and Mr. Knight in behalf of the defendant.

And I certify that the fee for taking said deposition-,
51 amounting to $—, has been paid to me by the —, and that the same is just and reasonable for the service performed.

Given under my hand and notarial seal, at St. Louis, Missouri, this the 21st day of June, 1886.

[SEAL.] ENRIQUE PARMER,
Notary Public.

52 In the Circuit Court of the United States, Eastern District and Division of Missouri.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant.

Defendant's Record.

Testimony taken on the part of respondent in this case before me, Chas. E. Weller, United States commissioner within and for the district aforesaid, pursuant to the annexed notice, at the office of Knight Bros., southeast corner Broadway and Olive street-, St. Louis, Missouri, commencing at 10 o'clock in the forenoon, on this 23d day of December, 1886.

Present: Mr. Upton M. Young, attorney for William Shannon, and George H. Knight, attorney for Preston M. Bruner.

PRESTON M. BRUNER, being duly sworn, testified as follows:

1 Q. State your name, age, residence, and occupation.
53 A. My name is Preston M. Bruner; age, 42; residence, 512 S. Jefferson avenue; occupation, contractor.

2 Q. What is the nature of your business?

A. Taking contracts, either for paving or flooring.

3 Q. What kind of pavements do you put down?

A. The pavements that I lay are called concrete pavements, cement pavements, composition pavements.

4 Q. Before going into the condition of these pavements I want you to state whether or not you are the defendant in this case.

A. I am the defendant in this suit of William Shannon against P. M. Bruner.

5 Q. Were you ever before sued on this same patent?

A. Yes, sir; Mr. Hull, who owned the patent previous to Mr. Shannon's ownership, sued me once and kept it in court as long as he felt inclined.

6 Q. Did the case come to trial?

A. It did not.

7 Q. What became of it?

A. I don't know.

8 Q. Do you know whether or not the bill was dismissed?

A. It was dismissed at his costs.

9 Q. Did you ever make any arrangement with Mr. Hull or with anybody under that patent by which that suit was dismissed?

A. No, sir.

10 Q. Did you ever acknowledge in any way the validity of this patent?

(Objected to.)

A. I did not.

11 Q. Now, Mr. Bruner, I want you to state fully and carefully the method of putting down the concrete pavement proper by you from the time that you first commenced up to the present time.

54 A. When I first started in this business, in 1877, just about nine years ago, I bought a business, and various things going along with it, of making hard tile—the business of making cement blocks in iron molds and when they are hardened laying them like stone or marble tiling. These could be made in sizes from twelve inches to two feet. I laid these blocks for one year and they proved satisfactory with this exception—that we couldn't make they stay fast—so we made numerous experiments until we hit on a method that we could make them fast, and when we had accomplished that we thought we had everything we wanted in this line, so we took all the contracts and did as much work as we could get for the next two years; but the first winter we noticed a few cracks around town in the pavements that we laid that we thought rather singular, but we paid no attention to it. The second winter a great many of our walks cracked, and great many of them that had not cracked the first winter. Then our hopes were all overthrown. Here I want to add that in the meantime I did lay several pavements in a plastic state; made them on the spot.

12 Q. State what you mean by a plastic state.

A. I made them right where they remained instead of making them in blocks and afterwards taking them there and laying them.

13 Q. Made of concrete?

A. Made the same way. I was aware at this time of the claims of Mr. Schillinger, and I made inquiries as to the validity of Schillinger's patent of a patent lawyer, William Eccles, who has an office in this building. I had laid but a few walks comparatively when I was told that I was infringing, and I thought I had better not trust on my own judgment and so I asked Mr. Eccles, and he told me he didn't believe if that patent was properly fought that it would

55 hold out. Now, to come back to the point where we had this trouble with the hard tile pavement, as I have stated. I walked over the whole city and examined every pavement, noted every crack and noted every circumstance connected with it to find out what was really the trouble with these pavements, which were undoubtedly good and the very best that I ever made, and ascertain the reason why they should crack more than those I had laid the first year. I wanted to get at the idea of the pavement. I was investigating the thing and was going to make a success of it if it could

be done. I make this explanation, because it will show how I grew up in the business and how I examined the matter to see what was to be done. I came to the conclusion that in the winter time the ground freezes more in one place than in another, and, in the second place, I became convinced from the facts before me that the most of the cracks were found along the most exposed sides of the sidewalks. By being exposed I mean where it was near the edge of the curb or where it was next adjoining some grass plat, where the water would soak in from the outside and get in, and I noticed almost all the cracks were parallel to these exposed sides with the exception of a very few, when, from some cause or other, a pavement might be heaved up in the middle, either because the foundation was not as thick or from some other cause. Now, I call the finding out of these things a discovery. Other cement men that I met all over the country, in discussing this matter, would say that the frost did it, as if the frost had any effect on the stuff itself. Now, the question was, if the frost should come why should it break more than a stone under the same circumstances? So I came to the conclusion that it was simply this: That cement-work runs together so close that the fit is perfectly tight all over, and if any cause operates in raising any portion in-
56 stead of that portion tipping up by itself independently, it tips all the rest along with it, and the weight of those that raise either breaks itself or some part of the rest. What I did first, I thought of Schillinger's patent. Says I, now let us apply that principle that he thinks is good to this hard tile business, and when I laid a row of tile I cut the mortar down straight, put the strips of tar paper along that row, then I laid the next ones against it. Well, the difficulty in doing it properly, after laying one or two pavements, made me quit that method and I adopted this. When I put the morter down, or concrete, whatever you may call it, I laid a block and I first took a trowel and cut around the edges so as to cut it clear of the mortar piece of the other blocks and put sand in there so that when the pavement was made, I argued, now each block sets on its own bed and is independent of every other block, consequently it can be removed; it can heave up and move without injuring itself or its neighbors. I laid pavements that year after that fashion. That must have been the fourth year after starting the business. I had an idea then that that would overcome the difficulty. The next winter proved it did not; not enough to enable a man to keep on in business without finding a great deal of trouble. Then I made a number of other experiments, which it is not necessary to relate, because they either spoiled the appearance of the pavement or wouldn't answer the purpose. Then I came to the conclusion that the only way to lay a pavement would be to lay them in large blocks that would lay in place simply by their own weight. Fortunately at that time a flagstone company was started here in the city, and they made it quite popular on account of the cheapness of it, and educated the people to take that style of pavement in preference to these black and white squares that had been so common.

57 14 Q. What do you mean by flagstones?

A. By a flagstone I mean a big stone that is used in the cities for sidewalks—they may be six or twelve feet square—in preference to small blocks. I want here to add further, that the trouble that I have had in concrete from the smaller blocks all the other parties have had with the blocks of natural stone. They had the same trouble in getting them fast, or if they got them fast they would break. Now, I could see by making larger stones that they would keep in place by their own weight by making them sufficiently strong, as strong as the flagstones that were found to answer the purpose, and by making the joints so they can heave up and down independent without hurting each other, just like flagstones do. I couldn't see why I shouldn't make a nicer, better, and cheaper pavement by this method than could be made with flagstones, consequently I commenced that kind of business. The first few pavements that I laid I used, I think, yellow paper; I believe they call it three-ply; three coats of paper, pretty thick, over an eighth of an inch thick. My idea in doing that was this: that if it stuck fast to the block on one side the other side of the other block, when the frost would leave the paper in the middle, would be soft and there would always be sufficient water in that that it would ravel inside and wouldn't bind. I laid several pavements after that method, but the experiment was not satisfactory to me. The reason was this: that when you make one block the face of it is rough in proportion that the pieces you use for the concrete are big, and when you lay the paper there against it and put the other block against it and ram the stuff down to get it solid the pieces will squeeze through the paper into the holes of the previous block and wedge, sort of
58 saw-teeth fashion. I was aware of this when I made the first experiments in plastic work, because I filled the holes up with sand so as to leave the block as smooth as possible, and I was satisfied that still it pressed the paper over into those soft hollows or else pushed the pieces clear through, and that they couldn't move as they ought to move. Next I adopted a method which I was opposed to at first, having known it a good while ago, and that method was to put in place of any kind of paper strips of wood of this shape, as was testified by my foreman. The small side of this is up.

NOTE.—The witness here produces a piece of wood which is marked "Respondent's Exhibit A."

WITNESS: This exhibit is the precise size of the wood. I have a bundle, and I cut this piece off. That represents the kind of wood inserted. Now, if I am allowed, I will state, here is something that was testified to by a man that was for some time a foreman—he stated that I told him when I got back from New York that it was foolish to pay a royalty on the Schillinger patent, and that I could lay sidewalks without using that method. He had his own style of language that I didn't use, but the sentiment was correct, and why I did say that was this: When I got back I became acquainted with George H. Wehn, of Philadelphia, against whom Schillinger or his representative brought a suit, and he gave me this book to show me

his defense, and in this defense he quoted a patent which gives this very language: "No. 5475, dated March 14, 1848, issued to Horace P. Russ." Now, I had known this, and I thought this was sufficient to show that there was no real originality or value in Schillinger's patent, and I objected to it until I had made all these experiments, and then I came back to this, and I will tell you why
59 I adopted this finally in preference to any kind of paper, sand, or anything else. By "this" I mean Exhibit A. This makes a joint which will allow blocks to be removed, and nothing else will—allow them to either be removed or to move among themselves. The reason of it is this: the block is undercut by this piece between here, and you leave a piece out, and the minute you start it a least bit it is loose, and every inch or fraction of an inch that you move it it becomes still more loose. The same reason also will allow it to move. I worked this method until this spring. The only objection I found to it was that it spoils the appearance of the joints on top; not the value, but the appearance of it. I use this now. When I mold the blocks I do as all others do; I make a cheap wooden frame to form the side or guide for the edges, as is described by everybody that has explained this thing, but before I put any material in I put these strips along the sides of this mold. Then when I remove the scantling I also remove these strips, instead of leaving them in as I did at first, and instead of using the wood there I put in some kind of concrete. That concrete may have lime as a cementing material, it may have clay or it may have hydraulic cement, or native, or imported, anything that will make a cheap concrete that will resist the pressure of working it, and in case the blocks do move, if they don't slip on this concrete, it will crumble in a way so the blocks will have an undercut shape and will move among each other without any friction. The reason I used this was for the reason that afterwards there will be a sharp edge here, and you need to run the groover around or take a trowel and round it off a little, for if you leave it in the state it is left it will be sort of jagged and make a bad appearance. I have made a little drawing here showing just how it was applied.

60 Said paper is marked "Respondent's Exhibit C."

This exhibit shows what object Russ had in making this, which was applied to street pavements and over places where there is something where they want to have the blocks so they can be removed, like this, for example. The application is not exactly the same; but in both these cases the object is to make blocks that can be removed, and therefore the means I claim in both cases are for the same purpose—namely, to shape the blocks so they can be removed.

Now I have come up to the present time with my experience. My object right straight along has not been simply to come to a point where I can do better than my competitors, but to make something that will equal, if not supersede, natural stone in all its relations to paving purposes, and with this end in view I have other experiments that I propose making during the coming year which have no interest in this case.

I want to say now, in speaking of my hard tile pavement cracking so as to be unsatisfactory, I did not mean to say that they were good for nothing or that they did not meet the wants of the people. On the contrary, they were specified by owners and architects, but I simply was not satisfied with them because they gave me more or less trouble, and they were not inferior to those laid by the owners or licensees of the Schillinger patent, as is indicated by the amount of business I did as compared with theirs. I also mention that I laid a few sidewalks in a plastic state at the beginning of my business without using anything between the joints, simply laid one block after another in the usual manner, and these pavements I am willing to compare with any laid by the Schillinger method, which pavements of mine were laid with no substance between, just
61 removing the molds which made the previous block back to the position to make the succeeding one and filling right against that last block without anything intervening.

I claim that I made discoveries in these experiments of mine which continued over six or seven years; but these relate simply to the discovery of the fact why cement pavements, laid in blocks or in a plastic state, should break so often when other stones, not equal in strength and quality—natural stones I mean—would not break at all. That discovery I believe I have made, and I claim that my method of avoiding that is sufficient, and, as I claim, it is just the same as indicated in that patent and intimated in other patents which I do not take any note of. I refer to the Russ patent, as shown in Exhibit C—the patent of 1848. I claim that that will answer every purpose for the substitute which I have now.

The witness for the plaintiff, Mr. Trabel, has intimated something about my trying to get around Schillinger's patent. In this explanation you will observe that I have not done that, but that I have simply taken one step after another, as the circumstances and the facts proved necessary to take in means that I saw would lead to the end which I tried to reach. That same witness stated that I knew nothing about the business. You will observe from what I have said that I do know something about it. If it is material to the case I will state that a number of my men ran away from me with some idea of mine that they thought was valuable, expecting to make an independent living on that simple idea that they ran away with. In other words, they stole my thunder without being able to furnish the lightning. That is all I have to state.

15 Q. You spoke in your statement of using tar paper between the tiling?

A. Yes, sir.

62 16 Q. How much of this did you use?

A. Well, it is so long ago that I couldn't tell you exactly, but it was very little. We just used it for a few days and we found it troublesome to carry out. The idea seemed good, but it was troublesome to carry out, to keep separation at the bottom. You couldn't keep the separation as perfect as by the next method I adopted.

17 Q. Did you use this at the time you were experimenting?

A. Yes, sir.

18 Q. And merely as an experiment?

A. Yes, sir.

19 Q. What is this tile that you speak of? Is it made of cement?

A. It is made of concrete—yes, sir—which always means a mineral matter cemented together by some cementing substance. Some tile are made with common cement, some with plaster of Paris as a cementing material, and some with Portland cement as a cementing material, and some with bitumen or asphalt. These are made out of sand and Portland cement. The principle for all is the same; it is simply a matter of other circumstances as to which to use—wear and strength and so on.

20 Q. Were these tile put down in a plastic or solidified condition?

A. They were, as stated in the beginning, put in iron molds and then put away to harden, and after they were hard like stone they were laid as stone or marble tile are laid. We called them tile because floor stones are called tile and they have a very similar shape; they are square pieces about the same size, but very few stone tile are as large as we make the cement.

21 Q. Did you ever use tar paper to form the joint between the block put down in the plastic condition as shown in your patent?

A. To the best of my recollection I never did.

63 22 Q. Mr. Trabel testified on the part of Mr. Shannon that in working for you on a pavement in front of Nugent's store, on Fifth street near Franklin avenue, that he, under your instructions, used tar paper between the blocks. Is it true or not?

A. It is not true.

23 Q. Now, did you use any kind of paper between the blocks to form a joint in this pavement at Nugent's?

A. I did; I used that yellow paper that I spoke of.

24 Q. How did you come to use that?

A. Well, I wanted to make a joint that would move up and down, and I thought that that paper, as I stated before, if it did in any way adhere to the blocks on each side of it, it would yield and the center would get rotted out or become soft from the moisture in the ground, and it would slip up and down without much friction. When you say a block can be removed it also implies that it can move in its bed among its neighbors.

25 Q. Did you find this paper a practical method of forming the joints?

A. No, sir.

26 Q. What was the objection to it?

A. The objection that I recognized in the start was that it would fit exactly into the depressions of the neighboring block, and for that reason I used sand first to fill those up, and by experimenting I found that that would not entirely prevent it. Now, I want to say if you ram hard at one place close to the other block you consolidate the stuff and also force the bottom of it against the neighboring block, and the neighboring block bulges up a little, and this paper will allow it to yield and fit right in there and it is under-

cut, and the block, even if it don't drive through the paper into the adjoining block, will press over enough to bulge out
64 the neighboring block so that it is practically undercut, and unless the blocks are so made that all the sides are perfectly parallel, without interlocking anywhere, they will not come out; you cannot remove them nor will they move amongst each other without injury; whereas if you make a joint that is beveled so as to make all the blocks bigger at the top than at the bottom—as, for example, with this strip of wood—then they can be removed and they can move among each other like natural stones.

27 Q. You say the paper would be pressed into the interstices of the adjoining block?

A. Yes, sir.

28 Q. What causes this?

A. The pressure that is required to consolidate your concrete. We have a heavy iron rammer, and ram the stuff down.

29 Q. You ram the stuff down of the block you are making?

A. Yes, sir.

30 Q. The block adjoining this has been made and become hardened?

A. Well, not hardened, but stiff enough to hold its shape.

31 Q. Then, when the piece of wood has been removed there is nothing permanent there to prevent the paper being forced into the adjoining block, as I understand?

A. No. If you would wait two days that adjoining block would get hard enough so you could ram it as you could cared to without any danger of its losing its shape, but it isn't safe to do so even the next day.

32 Q. Would it be practicable to wait until the next day?

—. Sometimes not; you sometimes want to finish a job in one day.

33 Q. What, now, is necessary to prevent the interlocking of the blocks as you are putting them down?

65 A. I mold my blocks according to the usual fashion, which has been so often explained, and where otherwise I would have simply my wooden strip for a guide I put inside of that this piece of wood; then I fill in as usual, and then when I take my guide away I peel this piece off that undercuts the block by the bevel, and then I take concrete of a poorer quality, made of various things, lime and sand, Portland cement and sand, plaster of Paris and sand, or most anything that makes some kind of hard material that has some binding qualities, and put that against the side of the new block to give that part just the same shape as the wood would have if it remained in there. Instead of having a wooden strip I practically have a concrete strip.

34 Q. Is this concrete of the same permanent nature as that of which the block is composed?

A. No, sir; it is purposely of a poorer quality of cement or lime, or whatever binding material is used to make it substantially weaker than the rest of the block, so it can crumble up if there is any occasion.

35 Q. And this is to allow one block to be removed without destroying it, and also to allow the blocks to raise independently in cold weather in case of frost?

A. Yes, sir.

36 Q. How long did you practice the use of plain paper or tar paper to form the joint?

A. I can't tell exactly. I think, though, that the plaintiff's witness mentioned all the jobs except, possibly, the one next the insurance building, and I think my foreman this morning brought that out.

37 Q. Then did you abandon the use of any kind of paper?

A. Yes, sir.

38 Q. As being impracticable?

A. Yes, sir.

66 39 Q. Did you use any kind of paper, except experimentally, in putting down concrete pavement? Did you ever use it?

A. No, sir; just in that case where I told you I used tar paper and in those few walks where I tried to see how this yellow paper would answer.

40 Q. And where you used the tar paper it was in connection with tiling?

A. With tiling; yes, sir.

41 Q. Have you stated, Mr. Bruner, all the substances used by you to form a joint between the blocks?

A. Substantially; yes, sir.

42 Q. Do you know of pavements being laid in this city under or in accordance with the patent in suit—that is, with tar paper between the blocks?

A. No; not at present. They were laid here when I first started in business by N. M. Bell; afterwards by Mr. Hull, from whom Mr. Shannon bought his patent.

43 Q. Do you know of pavements in this city that were laid under the Schillinger patent?

A. Yes, sir.

44 Q. Where are some of them?

A. One in a frequented place is at the Polytechnic building, Seventh and Chestnut.

45 Q. Can you state any others?

A. Yes, sir; that one that was mentioned this morning—the Empire building, at Eighth and Olive—and opposite 618 Chestnut, and Fourth and Clark avenue—but the witness this morning stated that he didn't lay that according to the Schillinger patent—and Seventh and Christy avenue.

46 Q. Have you anything to say regarding the condition of these pavements?

A. Yes, sir; they all illustrate just this very point that I have stated—that the pavements are broken right across the
67 blocks and the breaks run parallel, as I stated in my previous explanation, with the exposed side, and I want to mention particularly that at Seventh and Chestnut—the Polytechnic

building. For three or four years the part right at the Polytechnic was perfect, but the one just next door broke the next winter along the curb line parallel with it and three or four feet from it.

47 Q. What is this breaking due to, in your opinion as an expert?

A. It is due to the heaving along the exposed line of a side.

48 Q. What causes the heaving?

A. The ground swells in freezing and the part that is heaved is supported and won't break, but in heaving it takes all the remaining part and tips it up on the arch of a circle and the weight of people passing over it, or generally its own weight, is sufficient to break it about three or four feet from the line of heaving. If the block- slipped as they ought to slip the pavement would simply turn on the corners—that is, the corners would sort of interlock and slip, but they can't slip so they have got to break, since they are not strong enough.

49 Q. What prevents this slipping of the blocks laid under the Schillinger patent?

A. The close fit against the adjoining block, and possibly to some extent—in fact I know it is to a great extent—due also to the material of one block making an impression through the tar paper into the other block.

50 Q. Would you consider, as an expert, that the method disclosed by the Schillinger patent—that is, the use of tar paper between the blocks to form the joints—is a practical method of laying concrete pavement, and by practical I mean a method which will give satisfaction in use?

68 A. No; I do not, and I want to say here that if I had not been able to continue these experiments with my hard-tile business Schillinger would have cut short my career long before I could have reached the result I did. I think he has been a bugbear to the business.

51 Q. Do you think that his alleged invention was beneficial or otherwise to the art of laying concrete pavements?

A. It was as I have just stated; it was a great hindrance because it took away all originality and all chances of experimenting, and it was just by accident that I had a line of business where he could not interfere, which is the only thing that saved me and allowed me to accomplish what I have done.

52 Q. Mr. Schillinger states in his patent that his tar paper forms a water-proof joint. I will ask you whether this is true of the sand or wood separator used by you.

A. They are not water-proof, and it is something that is not required. If you lay two natural stone blocks or make two artificial stone blocks and leave an opening, if it is an eighth of an inch wide uniformly it will soon fill up with dirt and become water-tight enough to keep the water from running right down, just as is the case with brick pavements, without, however, letting a deluge get under the foundation.

53 Q. Does ordinary untarred paper form a water-proof joint, as stated in the Schillinger patent?

A. Well, not in the sense that tar paper does, because they absorb water and pass water. Tar paper is tolerably water-proof.

54 Q. Schillinger also states in his patent that his separators or divisions of tar paper admits of the blocks raising independently of each other when acted on by frost in cold weather, thus affording a packing in the divisions. Is this true or not?

69

A. It doesn't do it; and by drilling a hole in the center of any block, attaching a fastening of any kind to it and pulling at it, every man can convince himself as many times as he tries it.

55 Q. The complainants' witness, Mr. Trabel, testified that "the sand separates the block just as well as tar paper," and that although he had a right by license to use the Schillinger patent, yet he used very little tar paper. What is your opinion about sand being as good as tar paper to separate the blocks?

A. I think just as he does, and I will give him credit for it if that idea was original with him.

56 Q. If, then, tar paper is no better than sand, as the complainaints have shown by witness, what utility is there in the Schillinger patent, supposing the use of sand to antedate the Schillinger invention?

A. There is none.

57 Q. No utility, in your opinion, in the Schillinger patent?

A. No, sir.

58 Q. Is it necessary to place sand or any other kind of a separator between the blocks to form a joint?

A. It is not; and here I would give an instance which illustrates that very plainly. When you lay a block and move back your scantling preparatory to laying another block and you make the next block, when you are through with it you can go over with a beater and beat the first block so soft that you can finish both of them at the same time again; the whole top surface of both blocks becomes soft and plastic; you can do that two or three times over and rub the joints all together again, so that you don't see that there were two blocks, and you go and lay a straight-edge on what you presume to be the line between the two blocks and make a little mark over it of even, say, half an inch deep, and if you do that and you do not hit the point exactly where the straight-edge was before, in the course of a month or so you will find there is a crack right along where the straight-edge was, and not where your cut was, even if there was nothing between them. That is often proved. They try to make blocks independent of each other, one after another, and they also leave sufficient of a mark to indicate on top that they mean to have it that way, and sometimes the man lays the line to make the mark at the wrong place, but it never breaks according to the mark, but always separates on the wrong line. At the Cass Avenue bank there was a careless workman, and I believe I am safe in saying that one-third of his blocks have the line at one place and the crack in another place, and it looks as though the stones were broke, but every time it parted where his scantling was originally in place of where he thought it was and where he made the mark.

70

59 Q. Now, if separators are not necessary to form joints between the blocks, what is the use of using any separators?

A. If you take my idea that simple tar paper is not sufficient to accomplish what it is intended for—that is, to let the blocks move and use it for the simple reason of making a joint—I think it is useless.

60 Q. I believe, though, that in practice you always use something to form a separator between the two blocks, do you not?

A. Yes, sir.

61 Q. Why do you do this?

A. Because I want that shape—the undercut shape in both blocks.

62 Q. What is the object to be sought? To permit what?

A. To permit them on account of that to move; to give individuality.

71 63 Q. So that either block can be taken up and so that either block can rise without affecting the other in case of frost, as I understand?

A. Yes, sir; permitting them to move amongst each other.

64 Q. In these pavements that you speak of, which were laid under the Schillinger patent by other parties, are more or less of the blocks cracked or broken or not?

A. A great proportion of them.

65 Q. Can you illustrate that by a sketch on paper?

A. Yes, sir.

Witness produces a paper which is marked "Respondent's Exhibit D."

WITNESS: In these two figures the double line represents the curbstone; the spiral lines in the center of each figure represent the shape of the blocks as made; they show the joint of the blocks. The little red lines show how the cracks run across the blocks, which, according to my interpretation, is caused by their yielding across their own substance instead of yielding along the joints along which they ought to move; and I also add that all of these blocks that are here separated, if they were individually laid out in an open field, they would not break for a century from the frost—which is to explain the common error that people have that it is the frost itself that hurts the pavements, which is not the case.

Q. When you speak of their being laid out in an open field, do you mean close together as in a pavement?

A. No, sir; apart—each block by itself.

Q. Simply exposed to the weather?

A. Yes, sir; that is what I call my discovery in this business, and now, after it is all over, it is very easy to see it.

Q. Your discovery, as I understand, was to prevent this cracking of the blocks?

A. Yes; to know the reason and how to avoid it.

72 Q. Did you ever see any pavement laid under or in accord-

ance with the Schillinger patent that did not have more or less of these cracks?

A. I have seen some that didn't break, but that is due to the fact that they haven't moved from any cause.

Q. How often is it that these pavements are not exposed to any movement in practice?

A. Well, it is very seldom that you find one that in the course of a few years doesn't move some.

Q. Did you ever see a pavement laid in accordance with the Schillinger patent that was exposed to movement where none of the blocks were cracked?

A. That I can't tell, because I never made that relative comparison.

66 Q. Do a greater or less proportion of the pavements which you have examined, which were made under the Schillinger patent, show cracked blocks?

A. They are cracked often enough, all of them that are laid without this precaution, to cause people to say, "Why, cement pavements crack." A pavement does not necessarily become worthless, but to people who know nothing about it it looks like a serious blemish, and even if the pavement lasts for years afterwards it makes a bad impression.

67 Q. Does it in a measure destroy the appearance of the pavement also?

A. The appearance more than the value of it.

68 Q. If you had a right to practice the method laid down in the Schillinger patent would you or not practice that method with your present knowledge of laying concrete pavements?

A. I certainly would not, because I would be afraid of the cracks.

Cross-examination:

73 1 X Q. Are you familiar with the decisions of the Federal judges in reference to the Schillinger patents?

A. Yes, sir; I have read a number of them.

2 X Q. Have you read the opinions of Judge Sawyer and Judge Blatchford and other judges with reference to the validity of that patent?

A. I don't recollect Judge Sawyer's, but Judge Blatchford's I read.

3 X Q. Are you familiar with the opinion of Judge Bradley, of the United States Supreme Court, in the case of the Atlantic Works against Brady, reported in the 107 U. S. Reports?

A. No, sir.

4 X Q. Never read that?

A. No, sir; never seen it.

5 X Q. How many of these Schillinger pavements have you ever put down or had put down yourself, about?

A. I didn't put any Schillinger pavements down.

6 X Q. None at all?

A. No, sir.

7 X Q. Did you ever direct any to be put down?

A. No, sir.

8 X Q. Now, I will ask you this question: If all your methods and mechanical process have not been directed to the point of effecting individuality in the blocks?

A. If by individuality you mean the idea of allowing them to move amongst each other and be removed, I answer yes.

(By Mr. KNIGHT:)

75 Q. If the Schillinger patent were to cover any kind of joint made between two blocks of concrete, as it has been attempted to prove in suits heretofore brought under the Schillinger patent, what would be the effect of such a construction of a pavement put down in a single piece, subsequently the other party desires the
74 same pavement in front of his premises? Supposing that the pavement in front of each man's property is in one single piece or block, what would be the effect?

A. Well, if the widest construction was put on his patent, as he claims to have decisions upon it, I don't see how one man can lay a sidewalk for two adjoining property-owners. You can only lay a block of certain size at the same time. If you had a pavement a whole block long you could not lay that whole pavement all at once, as you wouldn't have guides. If you take notice, in the descriptions of these patents they use guides. They had a straight-edge, according to which they cleaned it off, and you couldn't make a pavement a block long; couldn't construct it even if you tried to do it. The way they lay streets they start at one end of the street and concrete the whole distance across to the other end of the street, and notwithstanding they have sections, because they put it in here a little and there a little, and these little interruptions will make joints that, if they were on top where you could see it, you could see how the whole continuous piece was divided into an aggregation of subordinate pieces. If a man laid a concrete pavement and laid it all in one block and a neighbor gave him a contract for his property and he wasn't allowed to make any kind of a joint he couldn't lay the pavement, because he couldn't make one block of the two, and if he wasn't allowed to make a joint he couldn't lay the pavement at all.

76 Q. That is on the theory, as I understand, that wherever a piece of concrete is put down and another piece subsequently put down there is bound to be a joint between it.

A. There is naturally a joint; it will form a joint, and in this case you can make them that size; there is no trouble in making blocks that big, 25 x 12 or 30 x 12, if you make them thick
75 in proportion just as flagstone men make their stone when they want to lay large ones; then you could make a pavement one against the other, and having so few joints, but just on one side, I believe there would be no danger of breaking in that case either.

(By Mr. YOUNG:)

9 X Q. What is the usual width of sidewalks in St. Louis?

A. Twelve feet.

10 X Q. And, practically, what is the usual size of fronts of stores?

A. About thirty feet.

11 X Q. And residences, about?

A. Well, unless it is out in the suburbs, they may be from twenty-five to thirty feet front.

12 X Q. Now, practically, in laying these pavements according to your method, what is the average size of the blocks that you put down?

A. Well, my practice this year has been very generally twelve feet long by six feet wide.

13 X Q. Did you ever put them smaller than that?

A. I do, sometimes, make them just half across.

14 X Q. 6 x 6?

A. Yes, sir.

15 X Q. Isn't it very rare that you ever make them larger than 12 x 6?

A. It is very rare. I have made blocks, though. I made some over here on Washington avenue that was 14 x 10 or twelve, but that is exceptional.

(By Mr. KNIGHT:)

77 Q. I want to ask what you mean by your answer on the cross-examination that your object had always been in putting down these concrete pavements to form an individuality of the blocks.

A. Just what I said; in making the blocks so they could move themselves and could be removed—that is, they could move without jamming against each other.

76 78 Q. Do you mean to state that that is the only object you have always had in perfecting a concrete pavement? In your experiments in perfecting a concrete pavement, is that the only object you had in view?

A. Of course, I had an object in view in making the blocks strong and good wearing surface and all that, but so far as the mechanical part is concerned my answer is correct.

Signature waived.

JOHN SOELL, being duly sworn, testified as follows:

Direct examination by G. H. KNIGHT, Esq.:

1 Q. State your name, age, residence, and occupation.

A. My name is John Soell; age, 38; I live at 1015 Shenandoah street, city of St. Louis; I am in the brewery business and am cement contractor.

2 Q. Do you lay cement pavements?

A. Yes, sir.

3 Q. And cement flooring for breweries?

A. Cement floors for breweries mostly.

4 Q. How long have you been engaged in that business?

A. In St. Louis?

5 Q. At any place?

A. Since 1872.

6 Q. Where?

A. In New York since 1872 until about 1880 and since 1880 here in St. Louis.

7 Q. Who did you work for in New York?

A. John J. Schillinger.

8 Q. Are you acquainted with Mr. Schillinger's patent for concrete pavements?

A. Well, I am so far acquainted from what I learned while in New York of Schillinger's patent, which is to lay pavement
77 in sections, in blocks as I call it, and put tar paper around the block.

9 Q. Did you lay pavements in this city under the Schillinger patent?

A. I laid one right here on Olive and Fifth street.

10 Q. Whose store was it in front of?

A. In front of Alexander's drug store. I am ashamed to say it is not good; didn't turn out right; the first one was a bad one; something else was the fault. I laid one, but it was not a good one.

11 Q. Haven't you laid others in St. Louis besides that?

A. I have laid others; yes, sir.

12 Q. Where?

A. I laid one on Christy avenue and Seventh street.

13 Q. In front of what store?

A. In front of Mrs. Ames' building, and I laid one in front of the varnish company's building.

14 Q. Give the number of the first building.

A. The Christy avenue and Seventh street building was what we call the Mrs. Ames building, on the southeast corner of Seventh and Christy avenue.

15 Q. Which way does it run—on Seventh street or Christy avenue?

A. Well, on both; runs around the corner.

16 Q. Now, the third one that you were speaking of, where is that?

A. The third one is the Murphy varnishing building, right here on Fourth and Clarke avenue.

17 Q. What corner?

A. Southeast corner.

18 Q. That runs around the corner, too?

A. Yes, sir.

19 Q. Any others?

A. I can't think of the others now. Mr. Bruner knows where I laid them.

78 20 Q. Just state yourself.

A. Well, I can't think of it so quick now. I have laid one lately on Olive and Twelfth for Capt. Yore.

21 Q. Which corner of Olive and Twelfth?

A. It is the southwest corner.

22 Q. Does that run around the corner?

A. No; I only laid that on Olive street. I have laid one for Thorn & Hunkins, too.

23 Q. Where is that?

A. That is on Twelfth street, right opposite the Four courts—Twelfth and Clark avenue. It is not on the corner; it is the second house. We have laid a great many others; little jobs.

24 Q. Did you ever lay one in front of the Empire building?

A. I laid one in front of the Empire building; yes. That was the second one; that was a good one.

25 Q. Where is that Empire building?

A. That is on Olive street between Ninth and Tenth; that was the second one I laid. I laid that exactly by Schillinger's patent.

26 Q. Were all these pavements that you have mentioned put down under the Schillinger patent?

A. No, sir; only the two.

27 Q. Which two?

A. This here first one at Alexander's drug store. At that time I was working for the same party yet, for Schillinger, and the second one I made for Mr. Hull. Mr. Hull constructed it on the Schillinger patent.

28 Q. How is that pavement made?

A. That pavement is made each block separate and tar paper around it.

29 Q. Do you mean that you did not make it under Schillinger's instructions?

79 A. I made this first one under Schillinger's instruction and the second one I made under my own construction, but used Schillinger's patent.

30 Q. How about the third?

A. The third I laid without paper.

31 Q. How about the fourth?

A. That was the same. I didn't use his patent any more; didn't use any paper any more.

32 Q. How about the one at the Empire building?

A. That is the one that I made under Schillinger's patent; that was the last.

33 Q. The first, second, and last was laid under the Schillinger patent?

A. The first and second. The first was here on Olive street in front of Alexander's drug store, and the second in front of the Empire building.

34 Q. And then the one Seventh and Christy avenue?

A. That was just laid down soft, without paper, and cut with a trowel.

35 Q. What do you mean by cutting with a trowel? How deep do you cut it?

A. That is according to the way some men have of doing their work. I cut it an inch or an inch and a half; sometimes cut it through.

36 Q. Is it necessary to cut it?

A. Well, I think so. It cracks if you don't cut it, and if you cut it it cracks also.

37 Q. Is that also true where tar paper is put in?

A. It looks better.

38 Q. Does it also crack when tar paper is put in?

A. No; it can't crack so very easy, but sometimes I found a few cracks down there at the Empire building. That was put down six years ago.

80 39 Q. Where tar paper was used?

A. Yes, sir; I found some cracks there too, but very few.

40 Q. In putting down these blocks how do you lay them?

A. Lay them soft; mix them up, sand, cement.

41 Q. What supports the stuff while it is soft; what keeps it from running out?

A. Well, we take scantling.

42 Q. When it gets dry and hard what do you do then?

A. We have to take it out before it is dry and hard; have to take the scantling out for it to lay right level.

43 Q. Then what do you do?

A. Well, right against it we put down the next block, or just as it works the best. For instance, if I lay a pavement, I have to make two rows and to lay scantling right along in the center—in the middle—then I lay those blocks and take the scantling out.

44 Q. You move your scantling back?

A. Yes, sir; take it out and fill up the balance.

45 Q. Now, supposing you have laid a pavement under the Schillinger patent, with tar paper between the blocks, can you go there after all the blocks have become hardened and remove any one of them without scratching it?

A. No; not very well. That is according to how they are put in. For instance, I make a pavement to-day, and if I know before I put it in that I have got to move it I would make it so I can move it—would make it strong enough. For instance, I would use more cement, so it would be stronger.

46 Q. Supposing you merely put down the pavement in the ordinary way under the Schillinger patent, can you go there and move any of the blocks without cracking or breaking them?

81 A. I could move them, but I don't think I could move them without cracking them. I think you wouldn't find one in the winter that would be whole yet.

47 Q. Do you remember of putting in a post in the pavement up at Twelfth and Olive when you were laying the pavement—putting a post in and trying to get it out afterwards?

A. No; I didn't put no post there.

48 Q. Or tar paper around the post?

A. I put tar paper around a telegraph post—yes, sir.

49 Q. Did you try to take the post out afterwards?

A. Well, I only done that for to keep the cement off from the post. Whenever they have got to take the post out the flagging

has got to come out, anyway; couldn't take the post out without spoiling the stones—the cement.

50 Q. Did you ever attempt to take it out without spoiling the cement?

A. No; never.

51 Q. Do you remember putting in a gas pipe there for the illumination, when you were laying the pavement, with tar paper around the pipe?

A. Didn't put any tar paper around the pipe there—not as I know. There was a pipe there, but I didn't put any paper around it. I put it solid against it and put a bull's-eye on top of it, so they would find it—what we call a bull's-eye—because the pipe was lower than the top of the cement pavement.

52 Q. Did you ever try to take that out?

A. I didn't try. They made a different connection, I guess. I really couldn't tell you anything about it. I don't think they used the old one.

53 Q. Are you acquainted with Mr. Sullivan, the street inspector?

A. Yes, sir.

82 54 Q. Did he give you any instructions regarding this post that was put up there? The gas pipe, I mean.

A. He didn't say a word.

55 Q. Didn't say anything in relation to it?

A. Didn't say a word. He was around there several times watching me how I did the work.

56 Q. Didn't tell you to put tar paper around it?

A. He didn't tell me a word.

57 Q. Did you put that gas pipe in there yourself or did some of your workmen do it?

A. That pipe was in before. That was a brick pavement and the pipe was in before.

58 Q. Did you lay the pavement around the pipe or did some of the men do it?

A. My men done it; my men that worked there.

59 Q. Which one of your men did that?

A. I couldn't tell you that. I maybe done it myself. I couldn't tell you that now. I don't recollect any more. I know there was a pipe in there, but I don't know if they used that pipe for the gas or they put a new one in. As much as I know, I guess they put a new one in, but if it was in there before I couldn't tell, really. I couldn't remember that, now, any more. There is one end that sticks out that high (indicating).

60 Q. About how high—two feet?

A. Yes, sir; sticks right in there. I don't know how that got in there. It wasn't in there when I made the walk.

Cross-examination by Judge YOUNG:

1 X Q. How many pavements of brick have you put down in St. Louis?

A. Well, I couldn't think of it so very quick.

83 2 X Q. Take your time. I want to know exactly the number.

A. It would take me maybe a whole week to get at that. I have to look over my books.

3 X Q. Well, about how many?

A. Well, as much as I just told you here; it is about six. I may have laid seven or eight.

4 X Q. Not over eight, have you?

A. Oh, maybe I laid over eight.

5 X Q. What do you think about it?

A. Well, more or less.

6 X Q. When did you lay that Alexander pavement?

A. That was in the year 1879.

7 X Q. Go on, now, and state exactly how you laid that pavement; describe it fully.

A. How? You mean how I laid it?

8 X Q. I mean the mechanical construction of it.

A. Well, I was superintendent at that time for that man, but I didn't work there all the time. I done the inside work, but I told my men to lay the pavement the same thing as we laid before. Now, I swear to this what I say, and I know when I swear I tell the truth, and I tell the truth without swearing; but you want to know the construction—how we made it.

9 X Q. How you laid that particular pavement.

A. I used river sand and cement. That is all I can tell you.

10 X Q. Now, isn't it true that all these pavements were laid substantially like this one at Alexander's?

A. All the others?

11 X Q. Yes, sir; substantially like it.

A. Well, I have laid all the same way, except the one on Olive street for Mr. Yore. I have used granite for that.

84 12 X Q. Now, go on and describe that last pavement exactly—how you constructed that.

A. Which one?

13 X Q. The last one you speak of—on Olive street.

A. That wasn't the last.

14 X Q. The one you referred to on Olive, in front of the Empire building?

A. I made that the same way as I made the Alexander pavement—exactly.

15 X Q. Who were you working for when you laid the Empire building pavement?

A. John J. Schillinger, of New York.

16 X Q. Are you now in the employ of Mr. Preston M. Bruner?

A. No, sir.

17 X Q. Have you been in the last year in his employ?

A. No, sir; never. Never have been.

18 X Q. Have you any interest in his contracts in any way?

A. Never; not so far.

19 X Q. You had personally very little to do with laying any of the sepavements, hadn't you?

A. Well, I do very little.

20 X Q. You say you were superintendent?

A. I mean at that time. When I laid the first one I was foreman and superintendent for John J. Schillinger, and now I am working for myself, since that time, for the last seven years.

21 X Q. I mean in building and constructing these pavements in the last two years you had very little to do personally in doing the work?

A. I had very little.

22 X Q. The fact is you know very little about the details of the work of these pavements?

A. Well, I do most of the work for the brewers, and that
85 always kept me pretty busy, and for that reason I don't bother myself about the pavement work.

23 X Q. You are sort of on the outside?

A. Yes, sir.

24 X Q. Did you have any conversation with Mr. Bruner about this case that is pending here in the United States court against him?

A. That is the first thing I heard of. I didn't know what was going on; that is the first thing I heard of that: that I got to come to the witness stand and speak about this.

25 X Q. Did you have any conversation with Mr. Bruner before you were summoned here?

A. No; not as I know of.

26 X Q. You know him?

A. I know Mr. Bruner since I am here; yes, sir.

27 X Q. You are a particular friend of his?

A. Well, I don't know about that. You know like two business men in the same business, they are always friends.

28 X Q. Sort of stand by each other?

A. Yes. Well, I am a friend, and he is a friend to me, as far as that is concerned; but if I can take a job from him I do it, too, and if a man can take one from me he does it, too.

29 X Q. But, being in the same business, you sort of stand by each other. Is that a fact?

A. Well, as far as this concern is here it doesn't say yes and it doesn't say no. I was brought up here, and if it hurts him what I say I can't help it. If it does him good it is so much better for him.

30 X Q. Now, you didn't fully answer my question on this point, as fully as I wanted. I want you to describe accurately how these pavements were laid that you say were not Schillinger's patent.

86 A. I guess I told you. I laid it with river sand and cement—Portland cement.

31 X Q. And that is the only difference?

A. That's all. Well, and this here first Schillinger pavement was made with the same kind of material, only tar paper around the blocks.

32 X Q. About what date was this first pavement put down that you say was laid with tar paper?

A. I came here from New York the 4th of August, 1879—something like that—and about two months afterwards I put it down. I couldn't tell you the date now.

33 X Q. Can you state to the notary here the fact that all these pavements here were put down substantially alike?

A. All my pavements were put down alike, but I didn't use any paper.

34 X Q. And that was the only difference?

A. That was the only difference. I didn't use any paper; and another thing I did use the same kind of material, but maybe another kind of cement. We have got so many different kinds of cement, bye and bye we don't know the difference ourselves. When we used Schillinger's patent I used tar paper, and we got it laid a different way.

(By Mr. KNIGHT:)

61 Q. When you say, Mr. Soell, that you and Mr. Bruner are friends, what do you mean?

A. Well, whenever I see Mr. Bruner he looks some like a friend of mine; but, just as I tell you, we are friends in the same business. I don't mean nothing wrong by him; nothing out of the way.

62 Q. It is a business friendship?

A. Business friendship; that is all I mean; but still we are friends.

63 Q. You don't join particularly together to defeat others in the same business, do you?

87 A. Well, I see very seldom Mr. Bruner—very seldom—but if we meet we speak together.

64 Q. That is all—that is all you mean by being friends?

A. Yes.

65 Q. Now, Mr. Soell, you stated that you were the contractor for the pavement in front of Mr. Alexander's drug store and in front of the Empire building; that you superintended the construction of the pavements at those places?

A. Yes, sir. Well, at the Empire building I made more for myself, but I made it under the construction of Schillinger's patent.

66 Q. Do you know and can you swear of your own knowledge that tar paper was used there between the blocks?

A. Where?

67 Q. I mean in front of Alexander's drug store and in front of the Empire building, etc.?

A. Yes, sir; I swear to that.

68 Q. I merely want to know whether you know of your own knowledge that tar paper was used between the blocks?

A. Yes, sir; it was used.

Signature waived.

JOSEPH E. GRIMM, being duly sworn, testified as follows:

1 Q. State your name, age, residence, and occupation.

A. My name is Joseph E. Grimm; age, 23; residence, 1439 North Eighth street, St. Louis, Missouri; occupation, foreman for Mr. Bruner.

2 Q. How long have you been foreman for Mr. Bruner?

A. About four years.

88 3 Q. How long have you worked for Mr. Bruner?

A. About seven years and a half—something like that.

4 Q. What have you been doing for Mr. Bruner during this time?

A. Well, here four years ago I have been laying sidewalks for him; before that I have been laboring.

5 Q. Also making pavements before, were you? Laboring at the pavements, you mean?

A. Yes, sir.

6 Q. Does Mr. Bruner put down concrete pavements?

A. Well, yes; he puts down granitoid.

7 Q. Granitoid and cement?

A. Yes, sir; Portland cement.

8 Q. What is his method of putting this down? Just explain it. How do you go to work about it?

A. Well, we put down sections and take scantling, lay scantling down, put the first block in and finish that off; take the scantling away, and then join the next one to it; put a little mortar in between the joints—something like it.

9 Q. Did you ever put tar paper between the joints?

A. No, sir.

10 Q. Did you ever know of Mr. Bruner putting tar paper between the joints?

A. No, sir.

11 Q. Mr. Grimm, supposing you were to put down a pavement without putting anything between the joints at all. What I mean is, supposing you were to lay a block, with scantling against the block, and then move the scantling back, and then lay another block there, would there be a joining between the last two blocks where the scantling had been removed?

A. Well, yes.

12 Q. Whether there was any tar paper in there or not?

A. Yes, sir.

89 13 Q. Then, in your opinion, it is not necessary to put in tar paper to form a joint?

A. No.

14 Q. Are you acquainted with the patent granted to John J. Schillinger?

A. All I know of it is that the tar paper is the patent; that is all I know.

15 Q. What does he do with this tar paper?

A. Puts it in the joints between the blocks.

16 Q. Do you know whether after a pavement has been laid in

accordance with this description that any of the blocks can be removed without destroying it?

A. No; I think it would be broke each way under the Schillinger patent. The joint would break, of course—the top of the joint; can't take it out without breaking.

17 Q. Have you ever tried to remove a block from a pavement made under the Schillinger patent?

A. No, sir; never did.

18 Q. Did you ever repair one of Schillinger's pavements?

A. Yes, sir; I think I did—tiling.

19 —. Was there tar paper between the blocks?

A. Well, that I couldn't tell; I didn't see it; there was big tiling taken out, and of cou-se I would take them out, and then there would be cement; didn't take any notice of it.

20 Q. Now, Mr. Grimm, supposing you put down a pavement without anything between the blocks by use of the scantling, as you have stated, and after you get a block down, or a part of the pavement down, you form a cut with a trowel, and that cut doesn't happen to be where the scantling was, where will that block separate, at the cut or the scantling?

A. Where the scantling is.

21 Q. It won't separate at the cut?

A. No.

90 Cross-examination:

1 X Q. Are you a particular friend of Mr. Preston M. Bruner?

A. Well, not just a friend of him; I am just working for him, that is all; foreman for him.

2 X Q. What salary do you get?

A. $3.25 a day.

3 X Q. How long have you been getting that salary?

A. I have been getting $3.25 for about eight months; I had been getting $3.00 before that.

4 X Q. Now, state to the notary, if you please, how long since you put down a pavement which you know belonged to the Schillinger patent.

A. I never put any down.

5 X Q. Never did?

A. No, sir.

6 X Q. Now, then, go on and state accurately how you put down these pavements for Mr. Bruner—describe the process exactly.

A. Well, we use granite and cement—Portland cement. We put it down in layers like blocks.

7 X Q. What size?

A. Well, six feet by twelve or six feet by ten; any size at all, all sizes, and we use scantling and set up the scantling for a guide.

8 X Q. How do you set them up?

A. On edge, 2 x 4; set them up four inches high, and then we go to work and take the scantling away and we plaster it, put some old mortar or some old thing against it and put the joint of the next

one right to it; the next block the same way and keep going the whole stretch, as long as it is.

9 X Q. Now, have you described fully all that you do under Mr. Bruner's direction?

A. Yes, sir.

91 10 X Q. How many pavements have you assisted to put down in St. Louis?

A. I couldn't tell.

11 X Q. About how many?

A. I couldn't tell; I put down sometimes two pavements a day.

12 X Q. Can't you approximate the number you have put down in the last year, or two years, or three years?

A. No, sir; I could not.

13 X Q. Have you put down as many as a hundred?

—. I think I have; I couldn't tell, though.

14 X Q. Can you from memory now mention the names of some of these pavements that you put down?

A. Well, there is one up here on the street in front of the Dime Museum.

15 X Q. Give the name of the street.

A. On Sixth and Franklin avenue.

16 X Q. You put that down, did you?

A. Yes, sir; and there is one right this side of it, Sixth and Franklin avenue; there was one down here at a bank on Fifth between Olive and Pine; there is one out on Garrison avenue.

17 X Q. What number? Describe the street so we can get at it.

A. Garrison avenue between Morgan and Christy avenue.

18 X Q. Do you know the name of the person that owns the property?

A. Capt. Bent.

19 X Q. Now, I will ask you this question: Have all these pavements that you have had anything to do with been put down in the manner you have described?

A. Yes, sir.

20 X Q. None of them have been put down under what is known — the Schillinger patent—is that so?

A. That is a fact.

92 21 X Q. Now, I will ask this witness a question, and he can take his leisure to answer it, and that is to file with his answer a list of all the pavements in St. Louis that you have helped to build or construct. You can file it in answer to that question.

Defendant's counsel objects to the question.

22 X Q. Do you say that you can answer it or that you can do that?

A. I couldn't do it.

23 X Q. Do you keep a memorandum of where you work?

A. No, sir; I do not.

24 X Q. Could you furnish a list or could you answer now with a list of these places where you put down pavements—you say there are about a hundred of them in St. Louis?

A. I couldn't answer now.

25 X Q. You couldn't do it now?

A. No, sir.

26 X Q. Could you—if you had a little leisure of a day, could you make out a list and furnish it to the notary?

A. I don't think I could do it. I have got no time down with it and keep no memorandum of such matters.

27 X Q. You say this, though, that all of them were put down on the same principle?

A. All of them were put down just the way I explained it with the exception of this one at the Dime Museum.

28 X Q. How was that put down?

A. The same way; only I used some paper there.

29 X Q. What kind of paper?

A. This yellow paper.

30 X Q. There is a heap of yellow paper—what kind of yellow paper?

A. Well, similar to tar paper; only it is yellow. It hasn't got the tar on.

31 X Q. It was tar paper that you used?

A. Not tar paper.

93 32 X Q. Well, what kind?

A. It is yellow paper; it is paper.

33 X Q. There are so many different kinds of paper, I want to know what kind of paper you used?

A. Well, it is pasteboard paper as near as I can get at it.

34 X Q. Have you had any conversation with Mr. Bruner since this suit was brought about the facts of this case?

A. No. sir; I have not.

35 X Q. Have you seen him frequently?

A. He came up last night where I was working and told me to come down here this morning; to come down here at half past ten.

36 X Q. What did he say he wanted with you?

A. I don't know what he wanted of me; told me to come down to Fifth and Olive.

37 X Q. Didn't mention what he wanted you for?

A. No, sir; to come down here; didn't know what it was about or nothing; he said they told me to come up here.

38 X Q. You don't pretend to be an expert builder of patent pavements, do you? You don't pretend to be an expert workman in laying pavements?

A. Well, I can lay them.

39 X Q. You can manage to lay them; you are quite a young man?

A. Yes, sir; I started young at it.

40 X Q. Who is your superintendent generally?

A. Mr. Bruner is the superintendent and I am just foreman; that is about all.

41 X Q. You work under him?

A. Yes, sir.

42 X Q. You are working under him now?

A. Well, no.

94 43 X Q. I mean not just at this moment; but you are in his employ, are you not?

A. Well, I don't know; I don't know whether I will get paid for this or not.

44 X Q. If he don't pay you the notary will.

A. Well, somebody else will, I suppose.

45 X Q. Were you in his employ yesterday?

A. Yes, sir.

46 X Q. Getting three dollars and something a day?

A. Yes, sir.

(By Mr. KNIGHT:)

23 Q. Do you know, Mr. Grimm, whether or not one of Mr. Bruner's blocks could be removed without breaking?

A. Well, I do not. It would be a little chipped, and that is about all. We can remove them.

24 Q. How do you make them so you can remove them? What do you do in putting the pavement down?

A. We get straight scantling—that is what we look for—and then we put some pieces of tin that we get in the joint, and we take that out.

25 Q. When do you take that out—after the scantling is removed?

A. After the scantling and other block is down, take the tin and run a groover through the joint between the two blocks after the two blocks are together this way, and run a joint right through the center just where the groove is, where the scantling is taken from it.

26 Q. Do you use a piece of wood that you put in there kind of V shape?

A. Yes, sir; use a piece of wood there and take that away.

27 Q. Then what do you put in there?

A. Put old mortar and sand; anything at all.

28 Q. You fill that up?

95 A. Yes, sir; just to make a sort of a projection away there, so the other block don't bind to it.

29 Q. That makes the edge of the block inclined smaller at the bottom than at the top?

A. Well, just a little bit. It is about an eighth of an inch.

30 Q. That permits one of the blocks to be removed without destroying it?

A. Yes, sir.

31 Q. When you stated on cross-examination that you didn't know whether you would get paid for this or not you meant for giving this testimony—for coming down here this morning?

A. Yes, sir.

(By Mr. YOUNG:)

47 X Q. You rather thought you would get paid, though, didn't you?

A. Well, I thought I would get paid somewhere.

Signature waived.

FRANCIS SULLIVAN, being duly sworn, testified as follows:

1 Q. State your name, age, residence, and occupation.

A. My name is Francis Sullivan; age, 39; residence, 1704 North Tenth street, St. Louis; at present I am street inspector.

2 Q. Who are you street inspector for?

A. Under Gen. Turner, street commissioner.

3 Q. Are you familiar with what is known as cement sidewalks?

A. Well, partly; I have seen considerable of them laid.

4 Q. Are you familiar with the pavement in front of the Empire building, on Olive street between Ninth and Tenth?

A. Yes, sir; I have noticed it several times.

5 Q. What is the condition of that pavement?

A. Well, it is in tolerably fair condition.

96 6 Q. Are any of the blocks cracked?

A. Yes, sir.

7 Q. Have you ever noticed the pavement in front of Alexander's drug store, here on the corner of Broadway and Olive?

A. Yes, sir.

8 Q. What condition is that in?

A. That I should consider in a very bad condition.

9 Q. What do you know generally about these concrete pavements, in a general way?

A. Well, you mean as to their quality?

10 Q. As to their quality; yes, sir.

A. We generally consider the concrete pavement composed of granite and cement the best; that is the only one approved of by the board of public improvements, either the granitoid or the granilithic. The surface of both pavements are the same; the foundation is a little different.

11 Q. Do you receive, at your office, bids for laying concrete pavements?

A. No, sir.

12 Q. Who are they received by?

A. By private individuals.

13 Q. How about the pavements in front of public buildings?

A. Any pavement laid by the city is laid with North river bluestone.

14 Q. Were you ever called upon to investigate the concrete pavements, officially?

A. Yes, sir.

15 Q. What pavements did you investigate at that time?

A. I investigated the pavement on Olive street that you spoke of just now; I investigated one in front of the People's theatre; I investigated one on Fourth and Clark avenue, I think it is, and one on Fifth and Elm—or rather on Fourth and Elm; one on

97 Fifth, between Elm and Walnut streets, and one on the corner of Walnut and fifth. That is as near as I can recollect. It has been some time since I was called on to investigate those sidewalks.

16 Q. What did you report on these pavements?

A. I reported that I didn't consider them proper material to be laid in a district governed by the ordinance, for I didn't consider them good sidewalks.

17 Q. What was the reason?

A. Too liable to crack and become rough on the surface.

18 Q. Do you know by whom these pavements were laid?

A. Well, no, I couldn't say by whom they were laid, except this one on Olive street that was laid by Mr. Hull; it is Schillinger's patent, laid by Hull. That is the only one I have noticed the brand of, but a man by the name of Zebling made application for permission to lay some sidewalks composed of material which were claimed to be similar and claimed to lay in a similar manner, which was rejected by the board of public improvements, after submitting sample of the sidewalks and examined.

19 Q. Did you ever see any mark on these sidewalks that you speak of, stating the patent under which they were made?

A. Yes, sir; this one on Olive street; that was patented July, 1870.

20 Q. By whom?

A. By Schillinger, and it was by Hull.

(By Mr. YOUNG:)

21 Q. You refer to the Alexander sidewalk?

A. No, sir; this was on Olive street, between Ninth and Tenth, on the north side of Olive. That is the only one where I noticed the brand; the others may have been branded, and I suppose the brand had worn off.

98 Cross-examination:

1 X Q. Are not the surface and mechanism of the granite and the Schillinger patent system substantially the same?

A. No, sir.

2 X Q. In what respect do they differ?

A. Well, the Schillinger patent, so far as I have seen, is composed, I should judge, of gravel, sand, and cement. The cement and sand wears off, leaving the gravel sticking above; it either wears or washes off.

3 X Q. You say you never had your attention directed except to one case of the Schillinger patent?

A. That is the only place where I noticed the brand; yes, sir.

4 X Q. You couldn't say whether you observed any other Schillinger patent except that one?

A. No, sir.

5 X Q. You don't pretend to be an expert on the construction of these pavements?

A. No, sir; I am not an expert on that.

6 X Q. Your general observation is all you can state about it; in a general way?

A. That is all; yes, sir.

7 X Q. You speak about making a report about those pavements. Did you make a written report?

A. Well, I believe I did. I am not positive as to that now. The assistant street commissioner and myself examined the pavement.

8 X Q. I would like you to file that report in connection with your answer.

A. I don't know whether I could get that or not.

Mr. KNIGHT: We will get a certified copy and file it.

99 (By Mr. YOUNG:)

9 X Q. So you know very little about the construction about these patents?

A. About this Schillinger patent, I know very little about it.

10 X Q. Do you know Mr. Bruner well?

A. Oh, yes; I know Mr. Bruner well.

11 X Q. Particular friend of his?

A. Well, not a particular friend of his. I have done business with him very often, though.

(Mr. KNIGHT:)

22 Q. When you say you have done business with Mr. Bruner what do you mean by that?

A. I mean I superintend his works while he is laying sidewalks in the city and see that it is laid properly, in my official capacity; not otherwise.

Signature waived.

S. P. MCKELVEY, being duly sworn, testified as follows:

1 Q. State your name, age, residence, and occupation.

A. My name is S. P. McKelvey; my age is 38; residence, 2340 Pine street, St. Louis; occupation, flagstone business—laying flagstone sidewalks of natural flagging. That is my principal business, but I will state, however, that I am interested in the firm of P. M. Bruner & Co.

2 Q. State whether you have ever examined the pavements in the front of the Alexander drug store, corner of Broadway and Olive here, and also the pavement in front of the Empire building, on Olive between Ninth and Tenth, to ascertain the condition of those pavements.

A. Yes, sir; I have. I have noticed them frequently by being in the same business, before I was interested in the cement busi-

100 ness. I had noticed then, but recently more particularly, and I find that the sidewalk at Fifth and Olive, the Alexander drug store, is in a very bad condition; seems to be broken considerably and has been repaired several times. In front of the Empire building, on Olive street, the walk is in a pretty good condition. There is, however, a few cracks, very small ones, similar to this diagram, Exhibit D. While they don't illustrate exactly the way those cracks run, it shows near enough that the tier where there is two blocks that come together, in the center of the adjacent block, is where the crack occurs. I will state further that I have

very frequently in the last three or four years, having been engaged in the flagstone business that length of time—I have very frequently noticed cement sidewalks, tiling, and blocks. While I couldn't call to mind the particular places, I have noticed the Schillinger patent mark in the walks in a great many sidewalks in the city.

3 Q. State one instance of that.

A. I noticed it at the Polytechnic building and noticed it up here at this Empire building, and I have seen them in various places over the city.

4 X Q. That is the condition of the sidewalk at the Polytechnic building?

A. Well, it is cracked very badly next to the curb; in fact, next to some stone that was put in between the curb and building lines; stone put in there for coal-holes to be put in. Next to them they are cracked.

5 Q. In your opinion, what is this cracking due to?

A. It is due to the dampness when the ground freezes and when it commences to thaw and bulges up, and it is almost equal to one continuous stone. I will state further that, in my experience as superintendent of the St. Louis Flagstone Company, we have
101 been called upon occasionally to remove a cement pavement of Schillinger's patent and of others, and we find where they are laid in little tile of thirteen inches to twelve inches and two feet square, that in taking them up sometimes eight or ten feet of them will all come up together, and then, being thin, not to exceed an inch and a half, some of them an inch and none of them over two inches, it is impossible for them to stand the action of the heaving caused by the frost. We wouldn't lay stone that thin. We never lay stone thinner than two inches and a quarter to two and a half.

6 Q. You stated that the cracking is due to the upheaval or movement of the block. What is there about the Schillinger patent that causes the blocks to crack in upheavals?

A. Well, I know very little about the Schillinger patent. I notice that the walks with the Schillinger brand or mark on them are cracked as bad, if not worse, than others; but as to there being tar paper between them, I never seen any walks laid that way, nor never noticed it in taking them up, so that I couldn't say; but I have noticed this about these tile walks, either of Schillinger's or the others, they all seemed to be joined together so tightly that we could raise up sometimes eight or ten feet wide in length by probably four or five feet wide—in prying them up, that the whole thing would come up. They were so close together that the joints never moved and we had to break them.

7 Q. Does that show, in your opinion, that one block cannot rise independently of the other and cannot be removed independently of another?

A. It does, most assuredly. And I will say further that if the stone could be rubbed and made smooth, so that it would fit as close together as concrete blocks do, that putting the piece of

102 tar paper between them would not prevent them from breaking in taking them out.

8 Q. Are you familiar with cement sidewalks laid by Mr. Bruner, the defendant in this case?

A. Yes, sir; I am pretty tolerably familiar with them now.

9 Q. How do find the condition of those sidewalks as regards the cracking?

A. Well, I find them good. I find for the last two or three years, while we have only been interested with him for the last year—I find that for the last two or three years I couldn't find scarcely any cracks in them, and I will state in this connection that it used to be a standing offer of mine that I would start at any given point in the city and we would count ten cement sidewalks laid by the Schillinger patent and if I couldn't show cracks in nine out of ten of them I would lay a stone sidewalk free of charge, and if we did find a crack in nine out of ten of them they should simply pay my regular price; but when the defendant got to laying his granitoid sidewalk I thought, as I remarked to Mr. Haydel, that I would rather be in partnership with him than to be in opposition to him, as I couldn't find any cracks. I would rather have him for a partner than an opponent; but while he laid the little tiles or this Schillinger patent and followed that I didn't want any stock in it.

Cross-examination:

1 X Q. How long have you been in partnership with Mr. Bruner?

A. In the latter part of the winter or the early spring. It has been less than a year. Either last February or March, I don't recollect exactly which.

103 2 X Q. What interest have you in his business or in this particular business?

A. I have a fourth interest in it individually.

3 X Q. Is this your card at the head of this exhibit?

A. No, sir; that is the card of P. M. Bruner & Co.

4 X Q. You are interested in that firm?

A. Yes, sir.

5 X Q. Can you state to the notary about how many of these Schillinger patent pavements you have examined and found cracks in them—about how many in number?

A. I could not; no, sir.

6 X Q. Can you tell me about how many and where they are located?

A. Well, it would be a guess. They are laid all over the city.

7 X Q. I mean those that are cracked that you have examined?

A. Well, I will say, to be honest about it, that I never did find a walk laid by the Schillinger patent but what did have cracks.

8 X Q. Give us the names of some of them that you examined?

A. I couldn't do that. For instance, I would start out and go up Pine street or Olive street or maybe I was out at Grand avenue or half way between here and Grand avenue, and it is perfectly natural for me to look at sidewalks, being in the business, but as to telling how many I had examined I couldn't do that.

9 X Q. Couldn't you approximate it? The court, in order to attach any value to your testimony, must know if you made any examination that had some scrutiny about it. Did you examine ten?

A. Oh, more than that.

10 X Q. About how many?

A. Well, I want to be understood that this is only an approximate. I will say twenty-five or thirty.

104 11 X Q. Now give me the names of the particular pavements that you have in your mind. In front of whose house or whose store?

A. I couldn't do that.

12 Q. Give me the name of any one of them.

A. Well, I just happen to have in my mind now one out here on Lindell avenue, in front of James M. Carpenter's house.

13 X Q. Any other?

A. This one at the Polytechnic that I stated before, and then this one at the Empire building, and this one down here at Fifth and Olive, at Alexander's; there are several of them on Olive, but I can't locate them.

14 X Q. Have you ever examined any of these pavements of Mr. Bruner, since you have been in partnership with him, as to whether they have any cracks in them?

A. Yes, sir; before and since.

15 X Q. You have gone back into the early history of his business?

A. Oh, no; not particularly.

16 X Q. How many of them have you ever examined?

A. Well, by examined what do you mean?

17 X Q. I mean looked at them and found cracks in them.

A. Just as I passed over them?

18 X Q. Yes, sir.

A. Well, a great many of them; it used to be the St. Louis Tiling Company.

19 X Q. You found a great many?

A. I did; I mean in these little tiles.

20 X Q. Since you have been in partnership with him last March, have you examined any of the work done by Mr. Bruner and yourself to see whether it is all complete or not, in a state of perfection?

A. Yes, sir; I have.

21 X Q. Did you find any defects in any of it?

A. I haven't found any cracks.

105 22 X Q. Did you hunt for any?

A. Yes, sir; we see the defects in this work more than you or casual observers do.

23 X Q. But you know it has some defects?

A. There is nothing perfect; I haven't found any cracks in them.

24 X Q. You haven't pursued the inquiry of that branch of this case as closely as the other?

A. I have; we guarantee them and it is our interest to do it.

25 X Q. Do you know about how many pavements have been put down in the last year by Mr. Bruner, at a rough guess?

A. Well, it would be a rough guess. While I have a fourth interest and my partner, Mr. Haydel, another fourth, making the flagstone company own half in it, Mr. Bruner has the active management of it and I pay very little attention to the details of that business.

26 X Q. Could you approximate the number roughly, do you think?

A. I couldn't any more tell the number, not as well as I could tell the number if you asked me how many stone sidewalks I had laid the past year; I couldn't tell you.

27 X Q. Do you know whether he has ever obtained the patent for this improved process of constructing pavements?

A. None that I know of.

28 X Q. I suppose, like other business men, you and Mr. Bruner when you went into partnership in business exercised some zeal in advertising your business?

A. Yes, sir.

29 X Q. Recommending it for all it was worth to the community?

A. We try to; yes, sir.

Signature waived.

106 Mr. BRUNER recalled.

(By Mr. YOUNG:)

Q. Have you got any patent on pavements?

A. Yes, sir; I own two patents.

Q. What are they?

A. The Westermayer patent and the Julius Hopke patent.

Q. None on pavements?

A. On pavements. One is on making these hard tile pavements and the other on making these plastic pavements.

Q. Have you any other patents?

A. No, sir.

Q. No interest in them?

A. No, sir.

NOTE.—It is stipulated and agreed that the exhibits offered by either party may be retained by the attorney introducing them until the hearing; also that the signatures of the foregoing witnesses are waived.

The further taking of depositions is hereby adjourned until a future day, the testimony for the defendant not being closed.

In the United States Circuit Court for the Eastern District of M-ssouri.

WILLIAM SHANNON
vs.
PRESTON M. BRUNER.

Testimony taken on behalf of the defendant, before John A. Shields, United States commissioner for the southern district of New York.

NEW YORK, *January* 12, 1887.

Met, pursuant to the annexed notice, at the office of Knight Brothers, 234 Broadway, New York city.

107 Present: John A. Shields, U. S. commissioner; Edward Fitch, Esq., for the complainant; George H. Knight, Esq., for the defendant.

The commissioner adjourns the hearing from the office of Knight Brothers to his own office, room 73 Post Office building, city of New York.

It is hereby consented between counsel for the respective parties that the testimony be taken by a stenographer, in the presence of the commissioner, with the same force and effect as if taken by the commissioner in his own handwriting.

GEORGE L. SCHMIDT, being duly sworn and examined as a witness on behalf of defendant, deposes and says:

(By Mr. KNIGHT:)

1 Q. Please give us your full name, age, residence, and occupation, Mr. Schmidt.

A. George L. Schmidt; age, 64 years; residence, cottage No. 6, West 107th street, near Tenth avenue, New York; occupation, cement-work.

2 Q. How long have you been engaged in your present business?

A. Since 1869 or 1868. I can't tell, but I was in some cement business forty years—not here in the United States—in 1842 or 1843.

3 Q. What do you mean by cement-work?

A. Sidewalks, areas, and plastering.

4 Q. How do you put down cement sidewalks?

Objected to as immaterial.

A. We lay first some joists and cinders there and ram it good or wait and ram it, and then we lay a mixture of Portland cement and sand of four to one and just so many broken stones as it is possible to get in.

108 Plaintiff's counsel moves to strike out all this testimony as immaterial.

5 Q. Is the cement put down in a continuous piece?

Objected to as leading.

A. In general, we lay it in two halves now. If a sidewalk is twelve feet wide we lay joists along as long as the house, say twenty feet long, and the upper half is nearly all in one sheet, and then the lower half, and then we make some joists in those two sheets; and if the house is not large—sixteen or eighteen foot house—we make the whole thing in one.

6 Q. Are you acquainted with John J. Schillinger, of this city?

A. I know him since 1870, I believe, or 1869.

7 Q. Are you acquainted with a patent taken out by Mr. Schillinger?

A. Yes, sir.

8 Q. On concrete pavements?

A. On concrete pavements.

9 Q. What is that patent on?

Complainant's counsel objects and calls for the production of the patent as the best evidence.

A. To lay it in blocks and use tar paper between the joints—tar paper or the equivalent.

Complainant's counsel moves to strike out the answer on the ground that the patent is the best evidence of what it relates to.

10 Q. How long have you known of concrete pavements being laid in blocks?

Objected to on the ground that there is no proper foundation laid for its introduction and the patent is not before the court.

109 A. I knew it before 1869.

Complainant's counsel objects to the answer.

11 Q. How were these pavements made that you speak of being put down in blocks before 1869?

A. They was laid something like we lay them now, and afterwards they used to cut them. They used to cut them and make a mark on top of it—cut it in blocks and smooth it over again, but make it join on that cut.

12 Q. What was the size of these blocks?

A. Averaged about 4 x 6, 4 x 4, 6 x 6.

13 Q. You mean inches or feet?

A. Feet.

14 Q. How were the blocks formed?

A. First, they don't form it at all. I told you if the sidewalk goes twelve feet they lay six feet all whole and then cut it. That forms the blocks—cut the joints in.

15 Q. What do you mean by joists?

A. They lay a joist that way (illustrating). The joist is a piece of timber.

16 Q. What is this piece of timber put down for?

A. To have the right grade or line. Without that you would come up and down. It is a guide at the same time.

17 Q. What do you do after you form a block in this way?

A. How do you mean "form a block in this way"?

18 Q. Supposing you are making a pavement and form a block coming against this piece of timber, as you call it—after that block is completed, what do you do then?

A. We take the timber away and fill up the rest of it.

19 Q. What do you do with the timber when you take it away?

110 A. We fill up the space—the rest of the space—because we don't want that guide no more.

20 Q. Do you make any use of the timber after you take it up?

A. No.

21 Q. How do you form the next block?

A. You asked me first how I hear how they lay it; what I tell you now is how they used to lay it, but I suppose you want to know the way Schillinger lays it?

22 Q. No; I want to know how you laid it in 1869.

A. I don't lay it at all. We laid another way—we put a joist down here, the long way like I describe in here, and then we lay some cross-joists here (illustrating), and we make one block after the other.

23 Q. Then what do you do with the cross-joists?

A. Take them out after those blocks was done and fill in those here and finish those blocks, so long as I was with Schillinger.

24 Q. What did you do before you were with Schillinger—did you put anything in?

A. No, I don't put anything in.

25 Q. Was there any joints?

A. No; we don't make no joints then.

26 Q. Were those blocks all in one piece or in separate pieces?

A. Those sidewalk blocks? Each one was separate.

27 Q. There was a joint between each, was there?

A. Yes.

28 Q. When did you do this?

A. In 1870 or 1871.

29 Q. Did you use these cross-strips before you were with Schillinger or after?

A. After.

29 Q. Now, please explain what you used before you were with Schillinger.

111 A. We used only joists one way for a guide and another way, for instance, for a guide; and then after that a piece was laid, and we took those joists away and moved farther back and laid another piece only for a guide so as to make it level.

30 Q. Were those blocks in one or more pieces?

A. They were generally in one piece.

31 Q. Each block was in one piece?

A. Yes, each strip. There was no block—it was strips—the whole width of a building, for instance.

32 Q. How many blocks would there be in front of a building?

A. Two; two small ones this way and another way (illustrating).

33 Q. Were these two blocks in separate pieces?

A. Yes; that is in separate pieces; we took the joists away and put all the stuff right against the first piece laid.

34 Q. When did you do that?

A. I did that before I was with Schillinger. I did that with a firm named Holman & Bandmann.

35 Q. When were you with Holman & Bandmann?

A. I was just previous, before I was with Schillinger.

36 Q. What year was it?

A. That was 1869 or 1870; I can't tell exactly—it was so long ago; it was either 1869 or 1870. I think it was 1869, but I can't swear to it.

37 Q. When were you with Schillinger?

A. 1870 or 1871.

38 Q. When did you first become acquainted with Mr. Schillinger?

A. On Christian Schaeffer's brewery building.

112 39 Q. Did you do some work there?

A. Yes; I got that job there, and I go over that job and Christian Schaeffer told me, "You see the architect," and the architect was Mr. Schillinger.

The conversation with a third person is objected to.

40 Q. When did you do this job for Christian Schaeffer?

—. That must be in February.

(By Mr. FITCH:)

41 Q. What year?

A. 1870, I think; before the time this patent was out; it was a year before the patent was out.

(By Mr. KNIGHT:)

42 Q. Now, was it before or after this that you were with Holman & Bandmann?

A. I laid some sidewalk before this Christian Schaeffer business.

43 Q. Who were you with then?

A. I was working for Holman & Bandmann.

44 Q. And how was this sidewalk made—was it made like that you have just described?

A. Yes.

45 Q. Supposing, Mr. Schmidt, you put down a concrete pavement by means of these strips or timbers, and after one block is done you take the strip up and form another block, and then smear over the top and make the two blocks appear as one; and supposing you make a cut with a trowel, presumably over the place where the strip or timber was, and it happens to be to one side of where the strip or timber was, I wish to ask you where those blocks will separate? Will they separate where the cut is or where the timber was?

Objected to on the ground that the question is hypothetical and based upon a supposition; and complainant's counsel further objects to the witness answering the question because it calls for an

113 opinion, and the witness is not qualified as an expert to deliver an opinion on that question at all.

A. Where the timber was will be a crack; you see that every day; if the men are careless they make it down here half an inch from it (illustrating), and there where the timber was there is a crack; there is a crack and a joint together.

Complainant's counsel moves to strike out the answer on the grounds stated in the objection.

46 Q. How long have you been familiar, Mr. Schmidt, with the art of making concrete pavements?

A. Twenty-eight or twenty-nine years; let me see—eighteen or nineteen years.

47 Q. Do you remember having any conversation with Mr. Schillinger, when you first knew him, concerning concrete pavements?

A. Yes, sir.

48 Q. What was this conversation?

Objected to as immaterial.

A. I told him some very nice sidewalks could be made, and I told him how they ought to be made.

49 Q. How did you tell him it ought to be made?

Objected to.

A. I told him to lay it like I described it to you first, and cut it in blocks.

50 Q. Is this when you first became acquainted with him?

A. Yes, sir.

Cross-examined by Mr. FITCH:

51 X Q. Where were you in the cement business, Mr. Schmidt, before you were in the business here in the State of New York?

114

A. In Hamburg, Germany, in 1843.

The stenographer reads questions three and four and the answers.

52 X Q. In that answer which has just been read to you, what time do you refer to?

A. A couple of years before I laid for Schillinger.

53 X Q. What year was it that you laid for Schillinger?

A. I think the same year he took out the patent or the year before.

54 X Q. What means have you of determining that date?

A. The date of the patent is my guide.

55 X Q. Can you state now the date of the patent?

A. It is in June, 1870, if I am not mistaken, and I was a year before with Schillinger.

56 X Q. How do you know it was a year before that you were with Schillinger?

A. Because we don't make any sidewalks at all a year before.

57 X Q. Have you referred to any handwriting or memorandum to fix that date?

A. No; only I see it every day. I see the date and year of the patent in the sidewalk.

58 X Q. And that is your means of determining the time?

A. Yes, sir.

59 X Q. How do you fix the date when you first knew Mr. Schillinger?

A. I don't fix the date. I say only the year.

60 X Q. How do you fix the year?

A. I answered that already, by seeing that date and year every day on the sidewalk.

61 X Q. That don't fix the date?

A. Well, it was a year and a half before.

115 62 X Q. Have you anything but your memory to depend upon for fixing the time when you first became acquainted with Mr. Schillinger?

A. I may have a written agreement.

63 X Q. Have you anything before you now?

A. I have not here, but I think I have home.

64 X Q. Did you look at it with reference to testifying here?

A. No.

65 X Q. You say in answer to a question which was put to you that you are acquainted with the patent of John J. Schillinger?

A. Yes, sir.

66 X Q. Do you know that patent—have you read it and examined it?

A. Very often.

67 X Q. You speak of it now from recollection entirely, don't you?

A. Yes, sir.

68 X Q. Now, you state what that patent is for simply from your recollection of it, don't you?

A. No; I know what — is for.

69 X Q. Have you any other means than your recollection of it as you read it?

A. No; it is from my experience, too.

70 X Q. From your recollection?

A. And experience.

71 X Q. You say that you knew of pavements being laid in blocks before 1869?

A. Yes, sir.

72 X Q. What data have you from which to make that statement—what memoranda? Have you any memoranda or any writing from which you make that statement?

A. I have none in writing.

73 X Q. It is simply from your recollection, is it?

A. Yes; I hear it and I know it, too. I saw it.

116 74 X Q. That is your recollection?

A. That is my recollection.

75 X Q. You have no memorandum or any writing in any book or anything of that kind from which you can make the statement, have you?

A. Not now.

76 X Q. You think you can recollect the date accurately during these fourteen and fifteen years?

A. I wouldn't say the date; I say only the year.

77 X Q. Can you state what time in the year?

A. It was in the fall.

78 X Q. Are you positive about it, whether it was in the spring or fall?

A. Yes, sir; I am positive it was in the fall.

79 X Q. Now, what fall do you say it was, from your recollection?

A. It must be 1867 or 1868.

80 X Q. May you not be mistaken about that?

A. I am not mistaken at all about that; it was before I saw Schillinger.

81 X Q. Now, what pavement did you know of being laid in blocks before you saw Schillinger?

A. I laid some myself.

82 X Q. Where?

A. Some in Fiftieth street and Forty-ninth street, if I am not mistaken, on the west side.

83 X Q. Between what avenues?

A. Between Sixth and Seventh or Seventh and Eighth; I can't tell.

84 X Q. Are you any more positive about that date than you are of the location where you laid it?

A. I know the location. I am positive it was on the west side, between Eighth and Sixth avenues.

(By Mr. KNIGHT:)

85 X Q. Say what city.

A. Here in the city of New York.

117 (By Mr. FITCH:)

86 X Q. Were you a witness in the case of Schillinger against Gunther, a good many years ago?

Objected to as not cross-examination.

A. Yes, sir.

87 X Q. Did you testify at length in that case?

A. What do you mean?

88 X Q. The case of Schillinger against Gunther?

A. I testified; yes, sir.

89 X Q. Did you testify fully and at length?

A. I testified all that he asked me.

90 X Q. How long were you under examination?

A. Oh, I think a week. I don't know; it was five or six days, I know.

91 X Q. On direct and cross examination, were you?

A. Yes, sir.

92 X Q. Did you testify at that time in relation to all the facts which you knew about—the laying of pavement in blocks?

Same objection.

A. That I can't tell. I testified all that he asked me.
93 X Q. And they inquired of you very fully, didn't they?
A. I think so.
94 X Q. You thought at the time it was a pretty thorough examination, didn't you?

Same objection to all these questions.

A. Yes; six days is a long time.
95 X Q. You got enough of it, didn't you?

Same objection.

118 A. Yes, sir.
96 X Q. In your description of how those sidewalks were made before 1869, do you mean to say that they cut the pavement into squares before 1869?
A. Yes, sir.
97 X Q. That is what you mean to say?
A. Yes, sir.
98 X Q. Have you anything but your recollection to depend upon in making that statement—have you anything but your memory?
A. Well, I talked the matter over.
99 X Q. I don't ask that; that isn't memory.
A. I want to tell you how I come to that. I told Schillinger to have it laid in blocks.
100 X Q. I don't ask you what you told Schillinger; that isn't responsive to my question. The question is whether you have anything but your recollection from which to make that statement?
A. No.
101 X Q. When you say they cut in to make the joints in the sidewalk are you speaking of the time before 1869 or after?
A. Before.
102 X Q. And do you mean to swear positively that you did that before 1869?
A. I don't do it.
103 X Q. Do you mean to swear positively that you saw it done before?
A. Yes.
104 X Q. Before 1869?
A. Yes.
105 X Q. Who did you see do it?
A. That was done in Harlem.
106 X Q. Who did you see do it?
A. I can't tell the man; some men did it.
107 X Q. You saw some men do it in Harlem?
A. Yes.

119 108 X Q. On what piece of work?
A. On sidewalks.
109 X Q. Where—on what block?
A. I can't tell.
110 X Q. Then you depend on your recollection alone for that date and for the place?
A. Yes.
111 X Q. May you not be mistaken about the date?
A. I don't see it. I hear, I say.
112 X Q. You didn't see it at all?
A. Yes; and that is what I told Schillinger.
113 X Q. You didn't see it done?
A. No; but I heard of it and I told him that, and that was the reason he laid the blocks.
114 X Q. In giving the description of how you lay it, do you mean how you are laying it now—is that what you mean?
A. We laid it all the time that way
115 X Q. You are describing the way you lay it now?
A. Yes, sir.
116 X Q. When you say in 1870 or 1871, have you anything besides your mere recollection to fix the date?
A. To fix what date?
117 X Q. The date in 1870 and 1871; the date you mention?
A. The time I was working with Schillinger?
118 X Q. That date, 1870 and 1871. Have you anything besides your recollection to fix that date?
A. No; except what I told you already.
119 X Q. I am talking about the date when you worked for Schillinger?
A. It was in 1869 or 1870.
120 X Q. That is your recollection and that is all you have
120 got; you haven't any memoranda before you or anything of that kind?
A. No; but I think I have some documents.
121 X Q. You didn't look at anything before you came here?
A. No.
122 X Q. When you say 1870 and 1871 you say it upon your memory just as you stated before, don't you?
A. Yes, sir.
123 X Q. How do you know that the work done for Christian Schaeffer on that building was done before the patent was issued?
A. Because I talked afterwards.
124 X Q. Is it mere recollection—is it recollection alone?
A. I know, besides, that I never saw Schillinger before we did that work.
125 X Q. Do you know positively what date that was when you saw Schillinger first?
A. Not the date, but the month.
126 X Q. I ask the date. Do you know positively the date?
A. No; I don't know the date, I know the month.

(By Mr. KNIGHT:)

127 X Q. What was the month?
A. January.

(By Mr. FITCH:)

128 X Q. January of what year? Now, recollect I am asking you to state positively what year it was.
A. 1869 or 1870; in January.
129 X Q. Can you state which?
A. No; I couldn't.
130 X Q. Whether it was 1869 or 1870?
A. I can't tell exactly.
131 X Q. Have you anything but your memory to fix that date?
A. Yes; I have.
132 X Q. Now here before you?
A. No; I have got it home.
121 133 X Q. But you haven't looked at that before coming here?
A. No.
134 X Q. How long since you did look at it?
A. Not for many years.
135 X Q. Where was that sidewalk you laid for Holman & Bandmann?
A. In Forty-ninth and Fiftieth streets between Sixth and Eighth avenues.
136 X Q. Can you tell the date when that was laid?
A. Not the date, but it was laid in the fall previous to my working with Schillinger.
137 X Q. When you speak of having had a conversation with Mr. Schillinger, can you give the exact date when it occurred?
A. No, sir; not the date.
138 X Q. Can you give the exact place where it occurred?
A. In his house.
139 X Q. Where was his house at that time?
A. Ninety-third street near Third avenue.
140 X Q. Was any one else present at that conversation?
A. I think not.
141 X Q. Can you give the exact words of the conversation?
A. No; not the exact words.
142 X Q. Do you think if you should see the testimony which you gave in the case of Schillinger against Gunther that you would remember it.
A. I suppose so.

Redirect by Mr. KNIGHT:

143 Q. Where did Holman & Bandmann do work when you were with them before you met Schillinger?
A. Forty-ninth and Fiftieth streets, New York.

122 144 Q. Did you know Schillinger when you were working with them?

A. No.

Adjourned to Thursday, January 13th, 1887, at 10 a. m.

NEW YORK, *January* 13, 1887.

Met pursuant to adjournment.

Present: Counsel as before.

JULIUS HOPKE, being duly sworn and examined as a witness on behalf of the defendant, deposes and says:

(By Mr. KNIGHT:)

1 Q. What is your name, age, residence, and occupation?

A. I was born in 1848; my residence is 514 West Fiftieth street, New York; occupation, mason.

2 Q. What kind of work do you do?

A. I generally work now, since 1869, in the cement business.

3 Q. What do you make of cement?

A. Laying sidewalks, floors, copings, chimney caps, and cellar floors; I guess that is all.

5 Q. How did you lay these sidewalks in 1869?

—. The first sidewalk I laid in 1869 was laid by the firm of Bandmann & Holman in Jersey—Union Hill, Jersey. It was laid for the length of one building there in one piece, thirty feet by four or four and one-half, or something like that, and when we had it all laid we went there in the evening and cut it in tiles—that is, to make it look like natural stones—stone. The people wanted that.

6 Q. How deep did you cut it?

A. As deep as we could cut.

123 7 Q. You say this was in 1869?

A. That was in 1869; in the fall.

8 Q. How do you remember the date?

A. I couldn't say exactly the date, but it was in October—somewhere around there.

9 Q. How do you remember it was in October, 1869?

A. I know I started in June for the parties.

10 Q. Who did you work with the first of the year 1870?

A. In 1870 I was working for Schillinger & Schmidt.

11 Q. Was this — time that you laid the sidewalk in Jersey City that you have mentioned before?

A. (Interrupting.) It wasn't in Jersey City; it was Union Hill, Jersey.

12 Q. Was it before you went to work with Schillinger & Schmidt?

A. Before I seen Schmidt & Schillinger.

13 Q. Are you familiar with the Schillinger patent?

A. Oh, I laid lots of them; yes.

14 Q. How is that laid?

Objected to.

A. I believe it is laid by Schillinger; everything in blocks and separate frames—made by frames—and they put tar paper between them.

15 Q. Do you know of any such pavements in this city?

A. Yes; I know of some of them.

16 Q. Do you know whether or not the blocks sometimes crack and break?

A. Oh, yes; sometimes stay very good and sometimes crack.

17 Q. How do they crack? What is the form of the cracks?

A. That is something hard to explain.

124 18 Q. State how they crack—whether it is a regular line or an irregular line.

A. My opinion is that the stuff is so thick on one end and on the other that they break where the stuff is a little thinner.

Complainant's counsel objects to the opinion of the witness.

19 Q. When do you first know of sidewalks being laid in sections of cement or concrete?

Objected to as immaterial.

A. How do you mean?

20 Q. In blocks.

A. The first piece I laid for the firm of Schillinger & Schmidt was in about the middle of the summer. I couldn't tell exactly. It must be in June or July. It was laid in Forty-second street, on the east side.

21 Q. My question is this: When do you first know of sidewalks being put down and then the pavement, when completed, cut in blocks or sections like natural stone? When do you first know of that being done?

A. I don't understand what you mean.

22 Q. What I mean is when do you first know of a sidewalk being put down and then, when it is completed, divided into blocks?

Objected to.

A. Here in this country?

23 Q. Any place?

A. The first I saw was in Havre, France.

24 Q. Supposing, Mr. Hopke, in laying a pavement of this kind, you use a scantling to form the division between the blocks, and after the scantling is removed and another block made and the two smeared together you form a cut, and this cut happens to be

125 one side of where the scantling was, where will those blocks separate, at the scantling or the cut?

Objected to as hypothetical.

A. Where the scantling or the joist, as we call it here, lays it is bound to crack right there.

Cross-examined by Mr. FITCH:

25 X Q. You testified in the case of Schillinger against Gunther?

Objected to as not cross-examination and irrelevant and immaterial.

A. I don't think I done very much there.

26 X Q. You don't think you testified? Do you remember whether you testified as a witness in that case of Schillinger against Gunther?

A. All I had to do with Schillinger was I found out where Schillinger's name was in that sidewalk.

27 X Q. Were you a witness in the case of Schillinger against Gunther a good many years ago?

Same objection.

A. Yes; I believe I was.

28 X Q. Do you remember the date that you testified?

A. No.

29 X Q. Can you state what year it was when you testified?

A. I couldn't tell exactly.

30 X Q. You were called as a witness for Mr. Gunther, weren't you?

Same objection to all these questions.

A. Yes, sir.

31 X Q. And you were examined by Mr. Briesen?

Same objection.

126 A. Yes, sir.

32 X Q. And you were examined at a considerable length, weren't you?

Same objection.

A. Yes, sir.

33 X Q. You testified fully?

A. Yes, sir.

34 X Q. They asked you a great many questions in regard to the suit and you answered them, didn't you?

Same objection.

A. I did.

35 X Q. And that was a suit relating to this Schillinger pavement, wasn't it?

Same objection.

A. Yes, sir.

36 X Q. You can't state what year it was?

Same objection.

A. No, sir; I can't.

37 X Q. Can you state what year you came to this country?

Same objection.

A. Yes; 1869 I came here.

38 X Q. You are a native of Germany, aren't you?

A. Yes, sir.
39 X Q. What part of Germany?
A. Bremen.
40 X Q. And you came to this country in 1869?
A. Yes.
41 X Q. What time of the year?
A. In the middle of July.
127 42 X Q. You landed here in the middle of July?
A. Yes, sir.
43 X Q. Can you state the day?
A. No, sir; I could not.
44 X Q. You can't state the day of the month you landed here?
A. No, sir.
45 X Q. Did you go immediately to work after you landed here?
A. Yes, sir.
46 X Q. For what firm?
A. Bandmann & Holmann.
47 X Q. Do you know how many days you were under examination as a witness in that case; can you remember that?
A. No; I guess only one day, I think.
48 X Q. Do you remember the month of the year that it was in?
A. No, I do not.
49 X Q. Can you state whether it was 1871 or 1872 or 1873 or 1874 or 1875?
A. No, I can't do it.
50 X Q. Can you state the time that you worked for Bandman & Holman—how many months?
A. Yes, sir; I worked for Bandmann four months, and then I got sick.
51 X Q. You remember that it was four months?
A. Yes, sir.
52 X Q. But you don't remember the day of the month you commenced?
A. With Bandmann & Holman, no. It was in the latter part of July.
53 X Q. Do you remember the date when you stopped working?
A. No.
54 X Q. You have talked a good deal about the Schillinger pavement, haven't you, from time to time with different people?
A. Oh, yes; I did.
128 55 X Q. You were in the business and it was natural?
A. Yes, sir.
56 X Q. You have seen a good deal of the work laid and you have talked a good deal about it with different people?
A. Yes, sir.
57 X Q. Have you looked over your testimony in that case?
A. No; I have not.
58 X Q. You haven't seen it since?
A. No.
59 X Q. In what particular place in New Jersey did you lay pavement for Bandman & Holman?

A. It was in Union Hill.

60 X Q. At what particular properties?

A. Well, the property belongs to Becker.

61 X Q. Did you lay more than one piece for him?

A. In the summer time we done more work on his private property.

62 X Q. Tell the name of the owner of the first place.

A. Becker was his first name.

63 X Q. Who next?

A. That is all I know—all the names—and I done a piece for Bandmann on his own property.

64 X Q. You did a good deal of work there for a good deal of people and those are all the names that you can give now?

A. No; that was all that we laid for those two people, Bandmann's house and Becker's.

65 X Q. Were you four months doing that?

A. I was playing a kind of foreman there.

66 X Q. Were you four months doing that work?

A. Yes.

67 X Q. How large was the first piece of work for Becker?

A. The largest piece of work we laid was, say, 30 x 4½ feet, 30 feet long by 4½ feet wide.

129 68 X Q. How long did it take you to lay that?

A. That took us a day.

69 X Q. How many of you were there?

A. Two men.

70 X Q. Yourself and another man?

A. Another mason, yes; and some laborers.

71 X Q. How many men were working on that place?

A. We generally took three laborers to two masons; about five men.

72 X Q. How many days were you working there?

A. One day.

73 X Q. And the next piece you laid for Bandmann & Holman?

A. Yes, sir.

74 X Q. How large a piece was that?

A. That was a piece about 8 x 5.

75 X Q. That was the whole size?

A. That was the whole size.

76 X Q. How long did it take you to lay that?

A. That was a very tedious piece. I worked about two days on it.

77 X Q. How many were there?

A. There was only one laborer and me.

78 X Q. And those were all the pieces that you remember that you laid for Bandmann & Holman?

A. Yes.

79 X Q. Now, you say you afterwards went to work for whom?

A. Messrs. Schillinger & Schmidt.

80 X Q. Can you state the day when you went to work for them?

A. It was in January.

81 X Q. Do you remember the date?
A. No; not the date.
130 82 X Q. How long did you work for Schillinger & Schmidt?
A. A year for them, or a year and a half; something like that.
83 X Q. On what piece did you go to work first?
A. For Mr. Schillinger?
84 X Q. Yes.
A. It was in a factory.
85 X Q. Inside work?
A. Inside work.
86 X Q. How large a piece of work was that?
A. From there we went up and laid a floor in a brewery. That was only samples we made in that factory.
87 X Q. Whose brewery was it?
A. Christian Schaeffer's.
88 X Q. Do you remember any other piece of work that you did for Mr. Schillinger—that you worked on for him?
A. Forty-second street, New York city; it was for the builder, Steinmetz, on Forty-second street.
89 X Q. How large a piece of work was that?
A. That was one house, twenty or twenty-five feet front.
90 X Q. Do you remember the number?
A. No, sir; I do not.
91 X Q. Do you remember how long you were laying it?
A. No; I couldn't tell.
92 X Q. What other pieces of work did you work on for Mr. Schillinger?
A. From there we started on and done a small piece of work. I have forgotten where it was.
93 X Q. You have forgotten the place, but you know you were working for Mr. Schillinger in various places?
A. Yes, sir.
131 94 X Q. Was it all sidewalk work?
A. Yes, sir; and brewery and floor work.
95 X Q. Have you during the last two years done work on sidewalks?
A. Yes, sir.
96 X Q. For whom?
A. For myself and somebody else.
97 X Q. Where did you do the work?
A. Worked here in town.
98 X Q. Have you a license?
A. No, sir.
99 X Q. Do you lay the Schillinger pavement?
A. No, sir.
100 X Q. What do you lay?
A. I lay it all in one piece.
101 X Q. Then you haven't been working on the Schillinger pavement before for a good many years?

A. I suppose so; if he claims it, yes; but I don't know if it was his patent.

102 X Q. You say you know the style and the way the Schillinger patent was laid?

A. Yes.

103 X Q. Then, when you lay it after this style you know it?

A. I don't lay it as he does.

104 X Q. You don't lay this pavement and haven't for a good many years?

A. No.

105 X Q. When did you ever lay any of it?

A. Of Schillinger's?

106 X Q. Yes.

—. It was five years ago or six years ago.

107 X Q. Where did you lay it?

A. It was in the West Indies.

108 X Q. Under his authority and his contract?

A. Yes.

132 109 X Q. When you laid the pavement for Schillinger did you always lay it with tar paper?

A. Always did for him; yes, sir.

110 X Q. In the West Indies?

A. Yes, sir—that is, outside sidewalks, but not insides.

111 X Q. Do you remember when you were examined as a witness for Gunther whether your examination was adjourned over from one time to another?

A. I do not recollect.

Redirect by Mr. KNIGHT:

112 Q. You stated that it took you four months to do that work in Jersey for Bandmann & Holman and you stated again on cross-examination, both these questions being on your cross-examination, that it only took you a couple of days or so.

A. Yes; for one job.

113 Q. How long did it take you on all of them?

A. We were working in that factory. I was employed four months there.

(By Mr. FITCH:)

114 *X* Q. In Schillinger's factory?

A. In Bandmann & Holman's.

(By Mr. KNIGHT:)

115 Q. So that you didn't mean to say that you were four months on the two jobs in Jersey?

A. No; I didn't state that; it was only one day for one job and two days for the other job for Bandmann & Holman, as I stated there.

GEORGE L. SCHMIDT called for further cross-examination.

(By Mr. KNIGHT:)

145 X Q. Are you able, Mr. Schmidt, to more accurately fix the dates that you mentioned yesterday?

133 Objected to on the ground that the examination was closed yesterday.

A. Yes, sir.

Defendant's counsel states that the examination of this witness was not closed at the express desire of the complainant's counsel.

Complainant's counsel further objects to the question on the ground that the witness cannot be called upon in this way to correct his testimony, as he has given it before.

146 X Q. Give us those dates as near as you can, Mr. Schmidt.

A. I worked with Schillinger first in 1870, January about the second or third. I commenced the second or third of January, 1870.

147 X Q. Please go on and fix any other dates that you can that you mentioned yesterday.

A. Which dates do you mean?

148 X Q. The dates that you worked.

A. I worked for Bandmann & Holman in the summer of 1869 and I laid sidewalks for him.

Objected to as not an answer to the question.

149 X Q. I don't want to know what you did, but merely the dates.

A. In the summer of 1869 I worked for Bandmann & Holman and then in the fall I worked for myself in Williamsburgh, and then at the end of the year, in December—the latter part of December—I got that job from Christian Schaeffer and I commenced this job about the second or third of January, and on the seventh of January the same year Schaeffer gave me a check for $200, which I handed over to Schillinger.

Complainant's counsel object to the question.

134 150 X Q. Are you enabled to fix these dates accurately?

A. I got it. I took my memorandum, which I got home.

151 X Q. Are you familiar with the pavements laid under the Schillinger patent, with tar paper between the blocks, as you mentioned yesterday?

A. Yes, sir; I laid some that way.

152 X Q. What I mean is, do you know of such pavements now in the city of New York laid under that patent?

A. Yes; in Madison square and down on the Battery, Franklin square, and here on the City Hall park.

153 X Q. Where is Madison square?

A. Twenty-third street and Broadway; it goes up to Twenty-fifth or Twenty-sixth street.

154 X Q. What is the condition of this pavement; are the blocks intact or some of them broken?

Objected to as wholly immaterial.

A. A great many are cracked, and, again, a great many of them are repaired by Schillinger.

155 X Q. Have those blocks tar paper between them?

A. Yes, sir.

Recross by Mr. FITCH:

156 R. X Q. You speak of memorandums that you have; where are those memorandums?

A. I got them home.

157 R. X Q. You didn't bring them here?

A. No; I have got a copy of it here.

158 R. X Q. I don't ask you to produce a copy; you haven't the original memorandums here?

A. No; it is a copy of them.

Recess.

135 NATHANIEL G. YERKS, being duly sworn and examined as a witness on behalf of the defendant, deposes and says:

(By Mr. KNIGHT:)

1 Q. Please give us your name, age, residence, and occupation.

A. Nathaniel G. Yerks; age, 63; residence, 327 Central avenue, Brooklyn, New York; occupation, general mason.

2 Q. Please mention a few of the things you do—a few of the kinds of work you do.

A. Sidewalks and work on buildings and lay cement floors or anything of that kind—whatever come in my line of business.

3 Q. How long have you been engaged in this business?

A. About forty or fifty years.

4 Q. Did you say you lay concrete floors?

A. Not regularly; now and then, as they come in my way.

5 Q. Do you lay anything else but concrete?

A. Floors.

6 Q. Anything else besides flooring?

A. Brick.

7 Q. I don't ask you whether you lay other kinds of flooring besides concrete. Do you lay anything else in concrete; do you make anything else in concrete except flooring?

A. Yes; just according to the size of it; we lay it in blocks. If we have got a large piece of flooring we put it in separate pieces by laying joists or a strip of board and level it so as to have the floor level.

8 Q. Do you make anything else of concrete besides floors?

A. Well, no; not particularly. I haven't worked much at anything in that line. I have put blocks down in pavements and on sidewalks and in yards.

136 9 Q. When did you first make a sidewalk in this way?

A. It must be forty or forty-five years ago. I think it was in 1845 the first that ever I done.

10 Q. How did you make that?

A. By putting strips down and making my little square block, and after the block was made and the cement was set I would move the little strip somewhere else unless it was some old tin I had; I would leave that there. A good many of the blocks where I used tin I left the tin in to separate them and make up square blocks; some would be wooden strips and some tin.

11 Q. What did you do with the strips when you moved them back?

A. Moved them further out and started another block.

12 Q. Where did you do this?

A. That was in the Willoughby homestead, between Fulton and Willoughby streets. I think it runs as far as Pearl street, and stood upon the hill.

13 Q. What town or city?

A. Brooklyn, New York.

14 Q. When did you first put down this concrete in blocks?

A. Well, I don't know; in the city hall; there is a cement floor in the city hall; there we had to separate them; we could not lay it all in one piece; we put joists down to level it and to separate the blocks.

15 Q. Where is the city hall?

A. In Brooklyn.

16 Q. When did you do that work?

A. That was done right after the building was finished.

17 Q. When?

A. I can't bring that to my mind when it was finished—the year.

18 Q. Do you know whether it was before or after the war?

A. Oh, it was before the war.

137 19 Q. Were you in the war?

A. Yes.

20 Q. When did you enlist?

A. I enlisted in 1862.

21 Q. Did you use strips in the city hall floor?

A. Nothing more than joists.

22 Q. You used joists to form the blocks?

A. To get it so it would be level, and, of course, filled it all in on a level with this, and after it was filled down we would take that away and move it a distance away.

23 Q. When you moved it back, what did you do then?

A. Filled up the vacancy again.

24 Q. And how did you come to make those sidewalks at the Willoughby mansion in blocks?

A. Merely my own way of doing it. I was sent there to do it and make it look like stone, and I done it by making it into blocks.

25 Q. Do you know of anything else besides tin and wood being used to separate the blocks?

A. Not that I have seen. I have seen tin-foil used for separating

them. After the one block had been made lay tin-foil in between and then put the cement into the next form to make the block; that is merely to keep them apart.

26 Q. Was that tin-foil left in?

A. Yes.

27 Q. When was that done?

A. Well, about 1869 or 1870 I seen it in Sixty-first street, I have seen it in a good many places in the city, but I don't recollect any other where I could positively say, except Sixty-first street, for I was in the buildings myself.

28 Q. Are you sure that was before 1870?

A. I think it was; I couldn't swear to it, but, as near as I can recollect, it was between 1868 and 1870.

29 Q. In these jobs you speak of—the city hall in Brook-
138 lyn and the Willoughby mansion—were there joints between the blocks?

A. There certainly was when the wood was left there or the strips of tin left there. Of course, they would be separated then.

30 Q. You sometimes left this in, did you?

A. Yes.

31 Q. Supposing you were to take the strip out and move it back to form the next block, would there be a joint there then?

A. There would be a joint.

32 Q. Supposing you make a block and move your strip back to form another block after the first block has become set, will the second block adhere to the first?

A. No, sir; it will not.

33 Q. It isn't in the nature of cement?

A. No, sir; not after it was once set.

Cross-examined.

(By Mr. FITCH:)

34 X Q. The most experienced engineers have sworn it will?

A. I have experimented with it.

35 X Q. You swear that fresh cement set up against cement which has already hardened will not adhere?

A. I never could see it.

36 X Q. I want to know if you say it will not?

A. I say it will not, as far as my knowledge goes, and I have used a great deal of it.

37 X Q. Don't you know the fact that the most experienced engineers will testify and do testify that fresh cement set up against cement that has already formed and hardened will adhere?

A. I don't think so; I never read it; I never heard it.

38 X Q. Well, you have never read the record in this case, then?

A. I don't know as I have.

139 39 X Q. Then you swear that that was the way the joints were made. You set the fresh cement up against the cement that has already hardened and it didn't adhere and so made separate blocks. Is that what you say?

A. I didn't say where I had strips between them.

40 X Q. You had strips when you made the first block, and then you remove- the block and then you put in fresh cement against the first cement, didn't you?

A. Yes, sir.

41 X Q. And you say it doesn't adhere?

A. It doesn't. I have never known it to adhere.

42 X Q. And that is the way you formed the sections in the Willoughby pavement?

A. Yes, sir; and some of them I had tin between that I left between them.

43 X Q. Didn't you testify in regard to that Willoughby-mansion pavement in the case of Schillinger against Gunther?

Objected to as not cross-examination.

A. Maybe I did.

44 X Q. You swore very fully, didn't you?

Same objection.

A. Yes, sir.

45 X Q. Did you in that testimony swear that you put tin between the blocks and left it there?

Same objection.

A. Yes, sir; some of them.

46 X Q. You swore to that, then?

A. Yes, sir.

47 X Q. You testify now from recollection, don't you, merely?

A. Merely from recollection; the same as I did at that time.

140 48 X Q. You spoke of having seen tin-foil in this city. What date was that?

A. Between 1868 and 1870.

49 X Q. Are you sure of that?

A. I am positive.

50 X Q. That is your recollection only, isn't it?

A. Yes, sir; my recollection.

51 X Q. You have nothing else but your recollection to trust for that?

A. Nothing, only I was to work for Mr. Hampton at the time. I hadn't been a great while to work for him.

52 X Q. Can you swear positively that you saw that there before 1870?

A. No, sir.

53 X Q. Can you swear positively that you saw it before 1871?

A. Yes, sir.

54 X Q. You swear positively to that?

A. I can swear positively to that.

55 X Q. In the city of New York?

A. In the city of New York.

56 X Q. At what place?

A. In Sixty-first street. I can't locate it; it is between Third and Fifth avenues and on the right-hand side on a row of buildings.

57 X Q. Did you make any memoranda of it at the time?

A. No, sir; I never had any thought of making a memoranda.

58 X Q. You didn't work on it?

A. No, sir.

59 X Q. And you remember it now?

A. I remember it.

60 X Q. So that you can swear positively that it was before 1870?

A. No; I can't swear positively it was before 1870, but it was by 1871.

141 61 X Q. You swear positively it was before 1871?

A. By 1871; between 1870 and 1871, sure; that I could swear to.

62 X Q. But you cannot give the month?

A. No, sir; I can't.

63 X Q. Nor the day of the month?

A. Oh, I think it was along in the fall of the year.

64 X Q. You think it was in the fall of the year of 1870?

A. 1870 or 1871.

FRIDAY, *January* 14, 1887.

Met pursuant to adjournment.

Present: Mr. Fitch, for complainant; Mr. Knight, for defendant.

ADAM BRANDT, being duly sworn as a witness on behalf of the defendant, testifies as follows:

(By Mr. KNIGHT:)

1 Q. What is your age?

A. I am 65 years old.

2 Q. What is your residence?

A. 349 East Eighty-seventh street.

3 Q. New York city?

A. New York city; yes, sir.

4 Q. What is your occupation—what is your business?

A. I am in the roofing business.

5 Q. How long have you been in the roofing business?

A. About fifty-six years or over. It is more than fifty-six years that I am in the business. I am in the business since I was 9 years old. I learned it with my father.

6 Q. Do you know Mr. John J. Schillinger?

A. I know him; yes, sir.

142 7 Q. Did you see Mr. Schillinger any time during the years 1869 and 1870? And, if so, state where and under what circumstances.

A. Well, I saw Schillinger all over the city at the time, in Brooklyn and Williamsburgh, wherever he worked. At that time I did a roof over in Brooklyn in what we call Williamsburgh for Messrs. Schneider—Schneider's brewery. They call it now the Williamsburgh Brewing Association. I put the roof on and he made the floor at the time there in the brewery—a water-tight floor with ce-

ment—what we call a cement floor—and that cracked and the water dropped down and he had trouble about it. I told him, "Why couldn't you make it better?"

Mr. FITCH: I object to this as wholly immaterial.

The WITNESS (continuing): I told Schillinger, "That ain't the way to do it." He wasn't a perfect mechanic in the business at that time, so I told him.

Mr. FITCH: I object to all this.

The WITNESS (continuing): Schillinger asked me if I knew any better way to make it than he was doing that, so I told him yes, and he asked me which way I thought was better, and so I told him that he should make any floor in a house or on sidewalk, or whichever he is going to make, in block and put tar felt into the joints, so that the thing can work, don't crack and leak any more, and I told him that would make it tight—water-tight.

Mr. FITCH: I object to the question and to the answer and move to strike it out now that it is down.

8 Q. When did this interview occur between you and Mr. Schillinger?

A. Well, it was in January, 1870, but I can't tell the day exactly. I have got it down in my books; I know it was the last day I finished with my job.

143 9 Q. Why did you suggest felt or tar paper between the cracks?

Objected to as wholly immaterial.

A. Into the joints, I said, and then the blocks wouldn't crack and it wouldn't leak and was water-proof. That makes it water-proof on account of the felt; it doesn't get rotten and keeps it always steady together.

10 Q. Had you ever, previous to that time, seen tar paper or felt used in cement joints?

A. Never before. I am a roofer and I understand this and used this kind of paper first in New York making asphalt, and Schillinger went a couple of years after and made an application for a patent on it by a lawyer. His name is—he keeps across the way here in Broadway—Mr. Briesen, I guess, is his name—that patent lawyer.

(By Mr. FITCH:)

11 Q. Von Briesen?

—. Yes, sir.

12 Q. You think he made an application through Briesen, did he?

A. Yes, to the Patent Office.

(By Mr. KNIGHT:)

13 Q. Are you sure he made an application through Briesen?

A. He told me so. I wondered on account of his going to take a

patent on it when I told him the way to do it, as I knew that when I got a patent out myself I had to swear to it that nobody ever told me or that I saw nobody else and that it was my own work, and that wondered me that he was going to take a patent out when I told him to do it so.

14 Q. Are you sure that he told you that he made an application for a patent through Mr. Briesen?

A. So he told me, and after I heard that he has got a patent out on it.

144 Cross-examined by Mr. FITCH:

15 X Q. You wanted the patent, didn't you?

—. No; I don't want the patent.

16 X Q. You thought that you ought to have it?

A. I wouldn't do it. I haven't got no use for it. I have nothing against him on account of this. I told him for his own benefit in his own business.

17 X Q. Were you ever a witness before in any suit of Mr. Schillinger's?

A. Well, a couple of years back he sued a man here in New York that did the same work, and he took me and I gave him the same witness.

18 X Q. When were you a witness?

A. I was a witness against another man he sued on the same matters, and I gave him the same as I said here.

19 X Q. When was that?

A. A couple of years ago. I don't know exactly how long ago it is.

20 X Q. Was it Lehman & Hauffee that he sued where you testitified as a witness?

A. I have forgotten the name of that man.

21 X Q. Did you see me there when you testified?

A. Well, I don't know any more exact. I know you by seeing you, but I don't remember at that time.

22 X Q. How do you know that it was in January, 1870?

A. Well, I know that I did that work there on the brewery.

23 X Q. You remember that, don't you?

A. That I know.

24 X Q. You remember it, don't you?

A. Yes.

25 X Q. That is the way you know it—you remember it?

A. Yes.

145 26 X Q. Conversation you had with Mr. Schillinger, did you write down that conversation when you had it—that talk you had with him?

A. Well, I will tell you this——

27 X Q. Answer my question now, please. Did you write that conversation down—that talk that you had with Mr. Schillinger; did you write it down—did you make a written memorandum of it?

A. I got it down; yes, sir.

28 X Q. Did you write it down then at the time?
A. I did write it down then.
29 X Q. At the time?
A. Yes, sir.
30 X Q. Where is that memorandum?
A. I don't know. I can't tell. I haven't got it with me at all.
31 X Q. You haven't looked at it since then, have you?
A. Well, I had it, when I testified before, with me. I had it in my own book, and I haven't got that book.
32 X Q. Did you see at the time?
A. I did.
33 X Q. When you testified?
A. When I testified; yes.
34 X Q. Have you looked for it now, before you came here?
A. I looked for it this morning, but I was so late in the time I had to leave.
35 X Q. You didn't find it?
A. No. I have got other books. There are so many to examine.
36 X Q. Then you have nothing here to show any dates or what that time was; you have nothing here now?
A. I haven't got anything with me at all.
37 X Q. You depend upon your recollection?
A. Yes, sir; that is so.
146 38 X Q. You have talked this matter over a good many times, haven't you?
A. Yes; I talked it over many times with my own sons.
39 X Q. And with other people?
A. With some other people, too; yes.
40 X Q. And didn't you tell them that you ought to have that patent instead of Mr. Schillinger?
A. Well, I told them Schillinger hasn't got any right to take a patent out on account I told him.
41 X Q. If anybody was to have a patent you ought to have it?
A. Well, of course, I didn't take it out.
42 X Q. You thought you had the right to it if anybody had?
A. I had the right, of course.
43 X Q. And you think now that if anybody has a right to that patent you have?
A. I have; yes.
44 X Q. Did you ever try to get a patent?
A. I got a couple of patents.
45 X Q. On this thing?
—. Not on this at all.
46 X Q. You got patents on some other things?
A. On the roofings.

In the United States Circuit Court for the Eastern District of Misssouri.

WILLIAM SHANNON
vs.
PRESTON M. BRUNER.

UNITED STATES OF AMERICA,
Southern District of New York, } *ss:*

I, John A. Shields, a commissioner duly appointed by the circuit court of the United States for the southern district of New
147 York, in the second circuit, do hereby certify that I have been attended by George H. Knight, Esq., counsel for defendant, and by Edward Fitch, Esq., counsel for complainant, and by George L. Schmidt, Julius Hopke, Nathaniel G. Yerks, and Adam Brandt, the witnesses named in the foregoing depositions, on the days therein indicated; that the witnesses were by me first carefully examined and cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the within-entitled cause, and thereupon gave their testimony, which, upon consent of the counsel for the respective parties, was taken by a stenographer, appointed by me for that purpose; that after the stenographic notes of the testimony of the witnesses had been reduced to writing the same was read by the respective witnesses, and they severally subscribed and swore to the same in my presence.

I further certify that the reason for taking the foregoing depositions is that the witnesses are material and necessary and that they live at a greater distance than one hundred miles from the place of trial of said cause.

I further certify that due notification of the time and place of taking the said depositions was made out and served on the attorneys for the complainant to be present at the taking of the depositions and to cross-examine, said notice being hereto annexed.

And I do further certify that I am not of counsel nor attorney for either of the parties in the said depositions and caption named, nor in any way interested in the event of the cause named in said caption.

In testimony whereof I have hereunto set my hand and seal this ninth day of February, in the year of our Lord one thousand
148 eight hundred and eighty-seven, and of the Independence of the United States the one hundred and eleventh.

JOHN A. SHIELDS,
United States Commissioner, Duly Appointed by the Circuit Court of the United States for the Southern District of New York, in the Second Circuit.

ST. LOUIS, MO., *February* 11, 1887.

PRESTON M. BRUNER, being recalled by the complainant, testified as follows:

1 Q. In your testimony given in this case you stated something like this: That you had discovered the effect of frost. I will ask you to state what you meant by this.

A. I did not mean that I was the one that discovered that concrete materials break from the frost; that had long been well known, but my experience in the hard-tile paving business had taught me that there was a general cause for the breaking of composition pavements, which was different from that which caused the stone paving to break. It was a question with me why a composition pavement alongside of a stone pavement made in the same size of blocks, of an equally good kind of material, and of an equal thickness should break in certain lines or directions irrespective of the blocks when in such stone pavement — joined it there was no breaks at all, or, if it did show any breaks, they were disconnected, making it apparently appear that the stones broke from some internal weakness rather than from some external general cause. What I claim to have discovered is why the composition pavements do that and the stones do not; and that discovery I claim
149 was that no matter how carefully you lay a stone pavement the flags will not be bound together, whereas with a composition pavement in spite of the best care they did so bind together. That is what I meant.

2 Q. Do you mean to say that concrete walks made by you never crack or break?

A. No, sir; I don't mean to say that; what I mean is that I have reduced the percentage of breaks sufficiently low to enable me to guarantee a percentage of breaking as small as that of any other class of stone pavement laid of an equal quality of material and of equal thickness and size.

3 Q. And you stated in your previous testimony, Mr. Bruner, that you were familiar with some of the decisions of the courts on this Schillinger patent. I will ask you whether you were working in defiance of these decisions, as you understand them.

A. No, sir.

4 Q. Did you ever practice the construction of concrete pavements as you understand it to be covered by the Schillinger patent?

A. No; and my explanation is this: About three years ago when I started laying pavements in place and in large blocks I had been entirely familiar with the method of making blocks so as to separate them, and the method that I know and have never tried was that indicated, as I said before, in the Russ patent. He stated that to make a joint that will not adhere to concrete previously placed he used a strip of wood wider at the bottom than at the top, and that I regarded as amply sufficient for all cases, and besides that he specified as equivalents such things as iron, iron stone, pottery, and any other thing, showing by the incongruous nature of the
150 material specified that what he had in mind was nothing

limited except by its practicability of attainment. I haven't the least idea if tar paper of a similar shape to the wooden strip which he did specify particularly he would have specified tar paper, but I went on the theory that if Russ' method was interpreted as liberally as Schillinger's had been there would have remained nothing for Schillinger to invent.

5 Q. There has been some testimony taken in this case concerning the pavement put down in front of Leubrie's store, on Broadway, near Franklin avenue, by you. When was this put down?

A. About three years ago; just when I started in this granitoid business, or concrete pavement made in place.

Cross-examination by Mr. YOUNG:

1 X Q. Why did you wish to be examined again, Mr. Bruner?

A. Because my attorney thought some things might be brought out plainer, so as not to be misconstrued.

2 X Q. Do you adhere substantially to the testimony heretofore given by you in this case?

A. Yes, sir.

3 X Q. Were you present in New York at the taking of depositions in this case of George L. Schmidt, Julius Hopke, Nathiniel Yerks, and Adam Brandt?

A. All except the latter.

4 X Q. Did you talk with those witnesses before they were examined, or since?

A. I have seen them since, and I carried a subpœna to all of them, and I told them just what I came with the subpœna for. I didn't tell them what to tell, as I didn't want to get any other testimony except what they had testified in the previous case.

151 5 X Q. You acted something like a deputy United States marshal?

A. Well, that I don't know.

6 X Q. In a word, you summoned them and served them with notice to come?

A. According to New York laws, as I understood it.

7 X Q. Did you hear all their testimony?

A. Not all of it; most of it.

8 X Q. Have you read it all in this book?

A. I haven't seen it.

9 X Q. But you heard nearly all their testimony?

A. Yes; with the exception of Brandt.

10 X Q. And having refreshed yourself in New York, you come here to make this correction, if it is a correction?

A. Not on account of the testimony taken at New York; I simply corrected things that I knew before we went there that ought to be corrected for fear of being misconstrued.

NOTE.—It is stipulated and agreed that copies of patents, both domestic and foreign, may be offered in evidence without being certified, with the same force and effect as if certified; and it is further stipulated that the exhibits may be retained by the counsel intro-

ducing them, subject to the inspection or use of the counsel on the other side and subject to their production in court.

Attorney for Preston M. Bruner offers in evidence the following copies of the U. S. patents:

H. P. Russ, No. 261, dated March 28, 1854 (reissue), marked Defendant's Exhibit No. 1.

J. E. Dotch, No. 97893, dated December 14, 1869, which is marked "Defendant's Exhibit No. 2."

152 F. N. Hopkins, No. 97088, dated November 23, 1869, which is marked "Defendant's Exhibit No. 3."

A. Van Camp, No. 93142, dated July 27, 1869, which is marked "Defendant's Exhibit No. 4."

H. B. Steele, No. 92390, dated July 6, 1869, marked "Defendant's Exhibit No. 5."

R. Foley, No. 82102, dated September 15, 1868, marked "Defendant's Exhibit No. 6."

P. Caduc, No. 80856, dated August 11, 1868, marked "Defendant's Exhibit No. 7."

C. G. Reinhold, No. 46975, dated March 21, 1865, marked "Defendant's Exhibit No. 8."

A. Straub, No. 40651, dated November 17, 1863, marked "Defendant's Exhibit No. 9," and

A. Straub, No. 40650, dated November 17, 1863, marked "Defendant's Exhibit No. 10."

Also copies of English patents as follows:

A. Chesneau, No. 350 of 1852, marked "Defendant's Exhibit No. 11."

R. Love, Jr., No. 11466 of 1846, marked "Defendant's Exhibit No. 12."

R. T. Claridge, No. 7489 of 1887, marked "Defendant's Exhibit No. 13."

J. H. Johnson, No. 2240 of 1866, marked "Defendant's Exhibit No. 14."

G. R. D'Harcourt, No. 7991 of 1839, marked Defendant's Exhibit No. 15.

T. Scott, No. 2199 of 1861, marked Defendant's Exhibit No. 16.

T. Scott, No. 555 of 1861, marked Defendant's Exhibit No. 17.

153 Sir John S. Lillie, No. 943 of 1860, marked Defendant's Exhibit No. 18.

W. H. Woodhouse, No. 2976 of 1853, marked Defendant's Exhibit No. 19.

T. B. Dodgson, No. 610 of 1853, marked Defendant's Exhibit No. 20.

J. F. Du Pont De Bussac, No. 567 of 1853, marked Defendant's Exhibit No. 21.

SAMUEL KNIGHT, being duly sworn, testified as follows:

1 Q. State your name, age, residence, and occupation.

A. Samuel Knight; age, 58; residence, St. Louis; patent solicitor and expert.

2 Q. How long have you been engaged in your present business?

A. About twenty years.

3 Q. Have you during this time been frequently called to testify as an expert in patent cases?

A. Yes, sir; I have.

4 Q. Are you familiar with the patent granted to John J. Schillinger July 19, 1870, for alleged improvements in concrete pavements, and the reissue of that patent which is here in suit, dated May 2, 1871? And, if so, please state what you understand the alleged invention to consist in.

A. I am acquainted with these patents, except as to the drawing of the original patent, which I do not remember to have seen; but, as the description of it coincides substantially with that of the reissue patent, I assume it to be the same, and would state, as to the original patent, the invention seems fairly stated in the preamble, or what is technically called the statement of the invention, which reads as follows: "This invention relates to pavements for
154 sidewalks and other purposes and consists in combining, with the joints of concrete pavements, strips of tar paper or equivalent material arranged between the several blocks in such a manner as to produce a suitable tight joint, and yet allow the blocks to be raised separately without affecting or injuring the blocks adjacent thereto;" and taken in connection with the claim, which reads: "The arrangement of tar paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose described." In the reissued patent I find an apparent attempt to expand the invention in the body of the specification, and also by the addition of another claim, which reads as follows: "A concrete pavement, laid in detached blocks or sections, substantially in the manner described."

5 Q. Do or do not you consider it a substantial part of Mr. Schillinger's invention to make a water-proof joint between the blocks? And I wish you would confine your answer to this question to the second claim of the reissue, as the first claim is stated in the complainant's bill to have been disclaimed.

A. I regard this as an essential feature, because I find this language in the specification: "The paper constitutes a tight, waterproof joint;" and the claim states, "substantially as and for the purpose set forth," which I understand to — the purpose mentioned in the specification.

6 Q. Please look at English patent, No. 610 of 1853, issued to T. B. Dodgson and marked Defendant's Exhibit 20, and state what relation such exhibit has to the Schillinger patent.

NOTE.—Complainant's counsel objects to all of the exhibits introduced by counsel for the defendant as being incompetent and irrelevant.

155 A. I find blocks set into a frame or set into frames and cemented between the walls of the frame and the block to prevent the passage of water, thus making a water-tight pavement.

7 Q. I ask you the same question concerning the English patent

of J. F. Dupont De Bussac, No. 567 of 1853, marked Defendant's Exhibit No. 21.

A. I find here frames filled with concrete material and the spaces between the frames filled with the same material. I also find that cloth saturated with tar, pitch, or bitumen is used in the formation of blocks or sheets to be laid down as a pavement, which, I suppose, would make a water-tight pavement.

8 Q. I ask you the same question concerning the English patent of Thomas Scott, No. 2199 of 1861, marked Defendant's Exhibit No. 16.

A. On this patent I find trays, which, it is stated, may be made of cast or wrought iron and wood, and which are to be filled with stones set on edge and the interstices between the stones filled with sand, grouting, or other material, thus making a distinct block of a number of which the pavement is formed.

9 Q. I ask you the same question concerning the English patent of G. R. D'Harcourt, No. 7991 of 1839, marked Defendant's Exhibit No. 15.

A. In this I find that concrete is inserted between the bars of metal molds which keep it from spreading beyond the point desired and the molds then removed and other parts of the pavement laid.

10 Q. I ask you the same question concerning the English patent of John Henry Johnson, No. 2240 of 1866, marked Defendant's Exhibit No. 14.

A. In this patent I find a pavement constructed of blocks,
156 consisting of concrete and bituminous material, set out of contact with each other, or at least with spaces between them, which is filled in with the bituminous material to make a water-tight pavement, so that the joints between the blocks are rendered water-tight by the addition of the last material.

11 Q. I ask the same question concerning the English patent of R. T. Claridge, No. 7489 of 1837, marked Defendant's Exhibit No. 13.

A. In this patent I find blocks composed of asphaltic material with bitumen and gravel laid down and cemented at the edges to form a pavement or the concrete may be laid between confining bars to form the pavement, the bar on one or both sides being removed and placed at a distance and another quantity of material laid between the first-formed part and the bar in its new position.

12 Q. I ask the same question concerning the English patent of A. Chesneau, No. 350 of 1852, marked Defendant's Exhibit No. 11.

A. In this patent it is proposed to so lay the concrete pavement that portions of it may be removed to reach pipes etc., beneath. To accomplish this the concrete is laid in wooden panels, of which any number may be laid side by side, according to the requirements. This language is used: "To avoid that difficulty"—said difficulty being the breaking up of a solid pavement—"I have made wooden panels from one to two and a half inches thick. I unite several of them together with wooden bars, nailed. Those panels will be three feet long and two feet wide, more or less. I bind these panels with iron bands and screws. Those bands are wide enough to admit of

a portion projecting beyond the surface of the panel, according to the thickness of the paving."

13 Q. I ask the same question in regard to U. S. patent No. 261 of H. P. Russ, reissued March 28, 1854, and marked Defendant's Exhibit No. 1.

157 A. The pavement described in this patent is so made as to enable the reaching of pipes, etc., below without the breaking up of the pavement, portions being arranged for removal as may be required. The inventor says: "The positions of the sewer pipes and branches are to be defined and metal or wood frames laid out in the manner shown by *d d*, thicker at the bottom than at the top, are to be laid down on this foundation to circumscribe a space or spaces forming a panel or panels over each sewer pipe and branch beneath. These may be made of sound wood, though common cast-iron or iron-stone pottery, burnt earth, or any other fit material may be used for the frame-pieces in the sectional form, shown in larger size in the detached figure, 3, and placed on the graded subsoil and partial pavement. Similar strips or frames should be laid, dividing the preparatory pavement lengthwise into strips or long bats. These bats and the frames above mentioned are to be filled with what is now well known by the technical name of 'concrete.'" In another part of his specification he says: "But when the strips of wood or other substance above mentioned are laid at short intervals from each other and the concrete poured in between them the concrete in solidifying will shrink laterally and leave open seams, through which water or gas can immediately rise to the surface of the roadway."

14 Q. What does Russ use to separate his blocks?

A. He separates the blocks of concrete by strips of wood, which I conclude from the language are sometimes fastened together in frames and sometimes separate.

15 Q. What relation do you see between the Schillinger patent and the patent issued to H. B. Steele July 6, 18–9, marked

158 Defendant's Exhibit No. 5?

A. I find in this these narrow strips of wood which are placed upon the foundation, and, as the concrete is laid over the foundation, are imbedded in the concrete, the purpose being to prevent the cracking of the concrete, which, the inventor states, has been a great source of trouble.

16 Q. I ask you the same question concerning the U. S. patent issued to A. Van Camp July 27, 1869, No. 93142, marked Defendant's Exhibit No. 4.

A. In this patent concrete is laid while hot or may be cast in molds and the blocks laid, this being used where they are liable to require removal, or the molds may be filled and the blocks left within the molds and the whole used for paving blocks.

17 Q. I ask the same question concerning the U. S. patent issued to A. Straub November 17, 1863, No. 40650, marked Defendant's Exhibit No. 10.

A. This is a patent on the formation of blocks of artificial marble, the material being cast in a frame; the various materials, which will

show a handsome surface, having the appearance of marble when polished, are cemented together with asphaltum and shale rock for this purpose.

18 Q. I ask you the same question concerning the patent of F. N. Hopkins, No. 97088, November 23, 1869, marked Defendant's Exhibit No. 3.

A. In this patent it is stated that the material may be rolled down in the place where needed or may be cast in bricks or blocks, which may be laid down and cemented together by a mixture of pine tar and Ritchie mineral or albertite, or both of the latter combined.

19 Q. Do you find in this patent that it was old prior to Schillinger's patent to use pine tar between the adjoining faces of paving blocks?

A. I find pine tar mentioned with Ritchie mineral or al-
159 bertite in the proportion of one hundred parts of the tar to fifty of the other ingredients combined, so that, to answer the question, it was not new to use pine tar in that connection.

Cross-examination:

1 X Q. Are you one of the firm of Knight Bros., patent lawyers in St. Louis, Washington city, Cincinnati, and other points?

A. Yes, sir.

2 X Q. Have you read the pleadings of solicitors or their briefs in the various litigations in the United States courts touching the Schillinger patents or their validity?

A. No, sir; I have not read any of them; in fact, I am not personally engaged in this case as counsel.

3 X Q. Have you read the opinions of the United States circuit judges in these Schillinger patent cases?

A. No, sir; I have not.

4 X Q. In reply to the various questions asked by the solicitor for the defendant touching the various patents submitted to you and their relations to the Schillinger patents, upon what theory do you form your opinion that the Schillinger patent is a nullity or invalid?

A. I have not stated such opinion.

5 X Q. Haven't your answers to these questions been framed substantially from the claims set up in these patents respectively?

A. Yes, sir; I think so. I have endeavored to fairly show the state of the art in that connection, as far as these patents went.

6 X Q. By reading from their claim?

A. By reading from the description of the patents; what we call the specifications of the patent.

160 7 X Q. As given by the patent agent?

A. Yes, sir; as given by the patent agent.

Signature waived.

Attorney for the defendant here states that he closes his case.

GEO. H. KNIGHT,
Attorney for Defendant.

F. N. JUDSON, *Of Counsel.*

161 And afterwards, to wit, on the tenth day of May, A. D. 1887, the following further proceedings were had *nunc pro tunc* as of May 3rd, 1887, and appear of record in said cause, to wit:

(*Decree.*)

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

This cause came on to be heard at final hearing upon the pleadings and proofs at this March term of this court and was, on the 22d day of April, 1887, argued by counsel for the respective parties, to wit, by Upton M. Young, Alexander Young, and Albert Blair, for complainant, and by George H. Knight and F. N. Judson, for defendant, and thereupon and upon due consideration thereof it is found and hereby—

Ordered, adjudged, and decreed that John J. Schillinger was the true, original, and first inventor of the invention shown, described, and claimed in the letters patent of the United States issued to him, the said John J. Schillinger, on the 19th day of July, 1870, and numbered 105,599; that said John J. Schillinger afterwards surrendered the said letters patent and upon due application on May 2nd, 1871, obtained new letters patent, No. 4364 of reissued letters patent, for the same invention; that the said John J. Schillinger was the true, original, and first inventor of the inventions as shown, described, and claimed in the reissued letters patent of the United States issued to him, the said John J. Schillinger, on the 2nd day of May, 1871, and numbered 4364; that the said reissue letters patent and the claim thereof are good and valid in law, and that the exclusive title thereto in and to all that territory, the city of St. Louis and county of St. Louis, Missouri, as recited in the bill of complaint, is vested in the complainant; that on the 1st of March, 1875,
162 said John J. Schillinger entered in the Patent Office of the United States his disclaimer and certain portion of things claimed by such reissue letters patent as set out in the bill; that on the 27th of May, 1879, the said John J. Schillinger, in writing and for value, assigned to J. L. & A. Hull all his title to such reissue letters patent No. 4364 and in the invention or process herein claimed, so far as the county and city of St. Louis, Mo., is concerned; also all his claims and rights against any and other persons who may infringe his rights under said reissue letters patent; that on the 5th of March, 1886, J. L. & A. Hull, for value, assigned, in writing, to William Shannon, the complainant, all their rights under said reissue letters patent; also all their claims and rights against any and every person who may have infringed their rights (since the 27th of May, 1879) under said reissue letters patent; and it is further—

Ordered, adjudged, and decreed that the defendant, Preston M. Bruner, has infringed the said reissue letters patent No. 4364 and

the claim thereof and the exclusive rights of the complainant, William Shannon, thereunder; and it is further—

Ordered, adjudged, and decreed that the complainant, William Shannon, recover from the defendant, Preston M. Bruner, the profits and gains that the said defendant has received or made or which have arisen or accrued to him by reason of all infringements of the said reissue letters patent No. 4364 and the claim thereof, and that in addition thereto the said complainant recover the damages which he has sustained by reason of said infringements, to be assessed pursuant to the statute in such cases made and provided; it is further—

Ordered, adjudged, and decreed that it be referred to Chester H. Krum, as master, to ascertain and take and state and report to this court an account of the gains and profits which the said defendant has received or which has arisen or accrued to him by
163 reason of the infringements of said defendant of the said reissue letters patent No. 4364 and the claim thereof, and also to assess the damages suffered by the complainant herein by reason of all infringements by the said defendant, pursuant to the statutes in such cases made and provided; and it is further—

Ordered, adjudged, and decreed that the complainant, in such accounting, have the right to cause an examination of the said defendant, *ore tenus* or otherwise, and also the production of his books, memoranda, vouchers, and documents, so far as the same are pertinent thereto, and the said defendant attend for such purposes before said master from time to time, as said master shall direct; and it is further—

Ordered, adjudged, and decreed that a perpetual injunction be issued in this suit against the said defendant, Preston M. Bruner, restraining and enjoining him, the said defendant, his agents, servants, and representatives, and each and every of them, from all further infringements of the said claim of the said reissue letters patent No. 4364, according to the prayer of the bill; and it is also further—

Ordered, adjudged, and decreed that the complainant recover from the defendant herein the costs of this cause, to be taxed.

And afterwards, to wit, on the twenty-seventh day of June, A. D. 1887, there was filed in said cause a report of the master in words and figures following, to wit:

(*Master's Report.*)

In the Circuit Court of the United States.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } In Equity.

To the Honorable Amos M. Thayer, judge of said court:

164 The undersigned, to whom as master the above cause was referred to state an account of profits to be recovered by the complainant, respectfully submits the following report:

The parties met for the first time before me on May 13, 1887. At that meeting and before any evidence was heard the defendant admitted that he had laid seventy thousand feet of concrete pavement under the Schillinger patent. He thereupon gave notice to the complainant that if the latter did not accept the admission and failed to prove that the defendant had made more than seventy thousand feet, or substantially more, he would move the court to tax the costs of the proceedings before the master against the complainant. At an early stage of his evidence the defendant admitted that he had laid seventy-five thousand feet of pavement under the patent. Subsequently the parties stipulated with reference to pavements laid by the defendant under the patent as follows: That the number of square feet of pavement manufactured by defendant under the patent in suit, as construed by his honor Judge Thayer in his opinion on the interlocutory decree in this matter, is as follows:

Constructed in 1884	14,960	sq. feet
" " 1885	19,415	"
" " 1886	27,000	"
Down to May 3, in 1887	6,050	"
Amount agreed to by Bruner over and above actual amount	7,575	"
	75,000	sq. feet.

It was further stipulated "that the defendant realized as great a manufacturer's or business profit per square foot upon the whole amount of the seventy-five thousand square feet aforesaid as upon that made or constructed in the year 1886.

Various hearings were had before me, at which testimony was introduced touching the matters referred to me.

165 Upon the question of profits I held the complainant to evidence tending to prove such profits as the defendant actually made, and I excluded all testimony which, had it been admitted, might have tended to prove that, had the defendant pursued a different course of business, he might have realized larger profits. The defendant, as an infringer upon the rights of the complainant, cannot be held to account for any other profits than those which he actually realized. What he might have realized by pursuing different courses of business would be an irrelevant inquiry.

Taking the year 1886 as the criterion by which all of the work done by the defendant is to be judged, the stipulation admits the manufacture of twenty-seven thousand feet of pavement under the patent. From this manufacture the defendant realized, according to his testimony before me (page 28), the sum of eight thousand dollars.

Judged by this standard, the defendant realized from his work the gross price of twenty-nine and $\frac{62}{100}$ cents per foot. The evidence shows that the elements to be considered in determining what profits were realized are crushed granite, Portland cement, cinders, labor, and certain incidental expenses. I find from the evidence (mostly

that of the defendant himself) that the expense of construction per foot of pavement was as follows:

Crushed granite	$.0533
Portland cement	.0650
Cinders	.0150
Labor	.0250
Wear & tear, incidental expenses	.0250
	$0.1833

or a total cost of eighteen and $\frac{33}{100}$ cents per square foot. Deducting this cost from the price received per foot and it leaves a manufacturer's or business profit of eleven and $\frac{29}{100}$ cents per square foot.

166 Accordingly, the defendant realized in the respective years of his infringement of the patent the following business or manufacturer's profit:

Year 1884	14,960	@	$11\frac{29}{100}$c.	$1,688 98
1885	19,415	"	"	2,191 95
1886	27,000	"	"	3,048 30
Balance work	13,625	"	"	1,538 25
Total feet,	75,000	@	"	$8,467 48

The defendant contends, however, that the criterion by which profits should be estimated and damages assessed is not the business profits shown to have been realized by the defendant, but such profits only as are shown to have been realized by him from the use of the patented improvement. The improvement upon concrete pavements covered by the patent is that of inserting tar paper or its equivalent between adjoining blocks of concrete. This insertion is made during the process of constructing the blocks. No license fee is shown to have been charged by the complainant under this patent. The defendant claims that no profit has been shown as due to the use of the patented improvement; that the evidence shows that there were several other methods open to the defendant which he might have used instead of the patented method, and that the complainant has failed to show any profits arising from the use of the patented invention over other methods which might have been used. On the other hand, the complainant contends that it is not practicable to construct a concrete pavement composed of blocks laid in a plastic condition without a separating medium equivalent to that set forth in the patent; that the evidence shows that the methods of construction to which the defendant could have resorted lead practically to the making of a continuous concrete pavement which is undesirable and worthless because of its cracking in cold weather, and that therefore all of the profits realized by the defendant must be credited to the use by him of the patented improvement.

167 The order of reference directs me to ascertain, take, state, and report to the court an account of the gains and profits which the defendant has received or which have accrued to

him by reason of the infringements of said defendant of the patent, and also to assess the damages suffered by the complainant by reason of all infringements by said defendant pursuant to the statute.

I interpret that order to mean that the profits which I am to consider are those which established rules of procedure in patent cases recognize as proper subjects of inquiry. I understand that the profits to be recovered in a case of this description are the profits attributable to the use of the patented improvement. Whatever distinctive profit belongs to the use of the "arrangement of tar paper, or its equivalent, between adjoining blocks of concrete, substantially as and for the purposes set forth in the patent, is the profit to be recovered." "Such distinctive profit must be shown affirmatively by the plaintiff. If he fails to show it *be* can recover nothing as profits."

Under this rule, which I understand to be too well settled to now be questioned, I have carefully considered the evidence before me with reference to this question of profits. In the light of the testimony I cannot say that the value of the pavement laid by the defendant was due altogether to his use of the patented improvement. I cannot find any evidence upon which I can reach a satisfactory conclusion as to the value of the improvement. With the burden of proof upon him to establish actual damages I cannot find that the complainant has satisfied the requirements of the rule to which I have already referred. Accordingly I find that the defendant has sustained only nominal damages and recommend judgment accordingly.

Respectfully submitted.

CHESTER H. KRUM, *Master*.

168 I return herewith evidence taken before me, together with the fees claimed by the stenographer for taking such testimony. My own fee for service in the matter is $300, for which I ask allowance.

C. H. KRUM.

Upon the filing of said report there was also filed a record of proceedings before the master in words and figures following, to wit:

(*Record of Proceedings.*)

ST. LOUIS, *May* 13, 1887.

WILLIAM SHANNON
vs.
PRESTON M. BRUNER. } No. 2650.

In the Circuit Court of the United States for the Eastern Division of the Eastern Judicial District of Missouri.

Proceedings before C. H. Krum, master.

The above-entitled cause having been referred to C. H. Krum, master, to report the findings, the following proceedings were had at

the office of Messrs. Knight Bros., southeast corner of 5th and Olive streets, on the 13th day of May, A. D. 1887.

Present: Upton M. Young and Albert Blair, for the plaintiff, and George H. Knight and F. N. Judson, for the defendant.

Mr. KNIGHT: The defendant here admits that he has laid 70,000 feet of concrete pavement under the Schillinger patent as construed by his honor Judge Thayer in this case—that is to say, with free joints between the blocks, made by either a temporary or permanent interposition of *s* substance or thing; and, having made this
169 admission, the defendant notifies plaintiff if he declines to accept it and proceeds before the master and fails to prove that the defendant has made more than 70,000 feet, or substantially more, a motion will be made and the court petitioned to tax the costs before the master and the proceedings thereunder against the plaintiff.

PRESTON M. BRUNER, sworn and examined, testified as follows:

(By Mr. BLAIR:)

Q. Can you give an itemized memoranda of the different pieces of work which accompany your statement herewith made?

A. Not in full. Before last year my business was a personal business, and I did not keep a set of books. When I looked over the record last night I found out there was one leaf gone in one year, but I think I made a liberal offer in my testimony, and I will make it 75,000 feet. I think 75,000 feet will cover it; it is between 70,000 and 75,000. The amount of money I shall have to pay will not make much difference.

Q. You are willing to modify the statements read on your behalf by Mr. Knight, so as to have it read 75,000 instead of 70,000?

A. Yes, sir.

Q. You could furnish some data on which you make this statement?

A. Yes; I could—some.

Q. Can you state how much between the 27th of May, 1879, and this date you laid in one year?

A. I can't tell; no, sir.

Q. Would your memoranda show it?

A. Not all of it; very little work was done; just a few thousand feet previous to the time I mentioned, laying what I called my "granatoid" pavement.

Q. You spoke of a partnership. What time did you go into that?

A. A year ago last March.

Q. With whom?

A. S. P. McKilbey and H. L. Haydell.

Q. Did the partnership keep an account of the number of feet laid since the partnership was formed?

A. Yes; that is correct.

Q. Who has the books?

A. I have.

170 Q. Can you produce them?
A. I can.
Q. I will ask you if between the 27th of May, 1879, and the present time you have laid in the city of St. Louis concrete pavement in this way, viz., by putting the concrete between the blocks or scantlings and after the concrete settled, or what they called "set," removed the scantlings and made another block just like it, leaving no tar paper or concrete or wood between it. If you put down any of that kind of pavement I wish to know it.

Objected to as irrelevant and immaterial.

The MASTER: Do you intend to include sand there also or other substance?
Mr. YOUNG: Yes.
The MASTER: I don't think the inquiry is competent under this opinion of the court. This patent covers the permanent separation of these blocks by sand, tar paper, and some other substance.

Plaintiff's counsel except to the ruling of the master.
(The objection was withdrawn for the purpose of allowing the witness to answer.)

A. I have.
Q. When did you begin to lay concrete pavement in the city or county of St. Louis?
A. About 1879, I believe.
Q. About what time?
A. In the spring.
Q. How long did you continue that business on your own account without a partnership?
A. Until last spring; up to about a year ago.
Q. Until the spring of 1886?
A. Yes, sir.
Q. Didn't you keep books showing the quantity of business that you did during that time?
A. Not regularly; I have simply got memoranda.
Q. Did you preserve those memoranda?
A. Not all of them; previous to 1884 I have not got any at all.
171 Q. Are you able to state now, approximately, the amount of business you did during that time?
A. I can't tell anything about it.
Q. Will you be able on taking further time to give an approximate statement?
A. Not that would be of much value, I think.
Q. Will you be able on having further time to make an approximate statement?
A. I don't know, but to approximate somewhere near.
Q. Will you be able to state the number of contracts you had in that time?
A. I can do that; yes.

Q. Giving the names of the persons for whom the sidewalk was laid?

A. Yes.

Q. And the quantities laid in each case?

A. Not in each case.

Q. Are you able to state the amount of business you did in money value during those years?

A. No, sir.

Q. Are you able to give an approximate statement of the amount of material that you bought in those years?

A. No, sir.

Q. Did you keep a cash book during that time?

A. No, sir; not a regular cash book.

Q. Did you keep any kind of one, regular or irregular?

A. I had some memorandums, but I didn't keep them. I think they are destroyed.

Q. Were those memorandums in a book or on scraps of paper?

A. In a diary.

Q. You have the diary, have you?

A. I don't know, but I think——

Q. Did you keep the diary yearly?

A. No; not yearly.

Q. Did you keep a diary all the time?

A. That I don't recollect.

Q. Are you able to state whether you performed as many as 100 contracts in that time?

A. Yes; I think I did more than that.

172 Q. Did you perform 500?

A. That I don't know.

Q. What is your impression as to having performed that number?

A. I can't tell.

Q. Can you say whether you performed a thousand?

A. Are these questions in regard——

Q. What you did on your own individual account?

A. What is your last question?

Q. Whether you performed a thousand contracts.

A. No; I did not.

Q. You are positive of that, are you?

A. Yes.

Q. What year or years did you do the larger part of your work prior to the partnership?

A. In the last year.

Q. In the year 1885?

A. Yes, sir.

Q. I am speaking now prior to the partnership.

A. I can't tell; 1885–1884, I think, were pretty much the same. I think 1885 was a little the largest.

Q. 1885 larger than 1884?

A. Yes, sir.

Q. And 1885 larger than the years preceding?

A. I gave the other day a statement that I laid about 60,000 feet—that is, altogether, including what I laid myself and what is laid by the company; and then some things—my attorney told me that probably some things would be included that I hadn't included, so I raised it to 70,000 feet this morning as I came in.

Q. In making up the statement you submitted to your attorney, what part of the work in your estimate was done prior to the partnership?

A. Almost half.

Q. Your judgment is you did about 30,000 square feet before you entered into partnership. Is that your present estimate?

A. Yes, sir.

Q. Are you able to give the names of the persons for whom that work was done?

A. Yes; I can give most of them.

Q. Stating the quantity in each case?

173 A. It would be a great deal of work if I would do that. I can just figure at it pretty close. I would have to go personally and measure each pavement and calculate it, and it would take six months to do that; but I can get pretty fair average.

Q. Without any great amount of work you can give the names and locations?

A. Yes, sir.

Q. That will be practically easy for you?

A. Yes, sir.

Q. Will you furnish that on time?

A. Yes, sir.

Q. That would be with reference to the work you did prior to the partnership?

A. Well, I would not like to furnish what tile-work I laid, because it is all in little jobs of 5 to 20 dollars. There would be a job occasionally of $100. If you refer to where I laid one block against another without putting anything between them, I don't think I laid—my impression is—not over 15 jobs, but, of course, I can't tell exactly the number.

Q. Your judgment is you laid about 30,000 square feet of this pavement prior to your partnership?

A. Yes, sir.

Q. All the pavement that you had made would be a proper matter of inquiry?

A. Yes, sir.

Q. How much of that was done in 1885?

A. About 15,000 feet, I should suppose.

Q. How much in 1884?

A. I think about 10,000.

Q. How much in 1883?

A. That I can't tell. There is hardly anything there. That includes all the rest, what I considered something like 15 good-sized jobs.

Q. Your impression is you did about 15 jobs prior to the spring of 1886?

A. Something like that.

Q. Can you mention some of the persons for whom that work was done?

A. Yes; there is H. G. Brookings. I was very careful up to that time—I mean up to the time I mentioned—in laying this granitoid pavement.

174 Q. What do you mean by being very careful; in what respect?

A. I know Schillinger's claims, and made it a point not to lay anything that could be interpreted as a part of his patent, and when I commenced laying the granitoid pavement I laid it according to what somebody did 30 years ago exactly and nothing more, and I thought I had a perfect right and would be allowed to do that, and think so still.

Q. When did you lay the Brookings work?

A. Almost when I commenced business.

Q. About the first job?

A. About one of the earliest jobs.

Q. What year?

A. 1879 and '80.

Q. Where was that work?

A. On Dayton street; that is laid with small blocks, nothing between, and as good a pavement as you can find in the city of St. Louis, showing Schillinger's method of tar paper gives no advantage.

Q. Besides the Brookings job what other jobs did you do?

A. That I can't tell.

Q. You can take time and give the entire number?

A. Yes, sir.

Q. You estimate them at 15?

A. Yes.

Q. How many of those 15 jobs will be shown by the memoranda you kept?

A. That I don't know; I doubt whether I kept any of them; they run pretty far back; I never imagined I would have any use for them.

Q. Have you destroyed any of your books?

A. Some of them, yes; I have looked over an old box I had, where I found those of 1884, and I didn't find any others, and I can't say there isn't any other.

Q. You say you have destroyed some of your books?

A. Yes, some are destroyed; receipts and such things that would enable me to tell.

Q. When did you destroy them?

175 A. That I can't tell; not lately; it has no reference to this testimony.

Q. Why did you destroy some and not all?

A. I don't know what I did destroy; occasionally I would go to my box, and when it was too full and there was no room for them I would take out such things as I considered of no value, receipts seven years old, etc., and throw them away; and I would go over

my letters and take out those that I thought would be of no use and throw them aside.

Q. You don't know whether you destroyed these or not?

A. I can't say; if they are not destroyed you are at perfect liberty to see them.

Q. It may be possible your memoranda may indicate some jobs of work that you don't remember now?

A. Yes.

Q. You think you will be able to give the names of at least 15 contracts?

A. I think so.

Q. Now, coming to the partnership, when was that formed?

A. March 24, 1886.

Q. Has all the work performed by your partnership been put down, or is it shown in the books of the partnership?

A. I think everything is shown in that.

Q. You will then be able to give the names of the persons and the quantities done?

A. Yes, sir; the only difficulty would be I did work repeatedly for parties and I can't from the entries tell which belonged to one and which to the other account and which belonged to accounts not included in this patent, but I made the estimate liberally, and I guess it is all right.

Q. But you are able to give the names of all the persons for whom you did work since the partnership?

A. Yes. Well, no; I think there is one leaf partly torn out from July to October.

Q. What year?

A. 1885, I believe.

Q. And when was the partnership formed?

A. 1886.

176 Q. But I am speaking of the partnership.

A. Oh, since then I have got a partner.

Q. Now, you say there was a leaf torn out of your accounts referring to 1885?

A. Yes.

Q. That was before the partnership?

A. Yes, sir.

Q. The remainder of the book is preserved?

A. Yes, sir.

Q. That relates to individual transactions?

A. No; it is all the same. That is before we formed the partnership.

Q. But I say that part of the book relates to individual transactions?

A. Oh, no; the whole of the book.

Q. You have your book relating to the individual transactions?

A. Yes; not that part, but the whole of the book.

Q. You say the whole of the book refers to the individual work?

A. Yes, sir.

Q. Then that book can be produced, except the individual leaf?

A. Yes, sir.
Q. What is the name of the book—what do you call it?
A. It is a diary that I kept.
Q. And you say you can produce that book?
A. Yes, sir.
Q. Which refers to transactions prior to the partnership?
A. Yes, sir.
Q. Does that book refer to all the transactions prior to the partnership?
A. It refers to 1885. It is simply in the back part of the book. Whenever I done work for a man I put his name down and the amount the job comes to and the date.
Q. And you have a separate book for the transactions of the partnership?
A. Yes, sir.
Q. Did you make the entries?
A. Yes, sir.
Q. What do you call that book?
A. I put the jobs down in the same way. Then I transfer them; take them to a book of contracts in the keeping of the books.
177 It is a memorandum I keep, from which the books are made and from which the accounts are transferred to our regular books. We kept books.
Q. Do you keep a ledger?
A. Yes, sir.
Q. Do you keep a journal and cash book?
A. Yes, sir; but this is a memorandum book.
Q. You keep a cash book?
A. Yes; memorandum book.
Q. Do any of the books show the names of the persons for whom you did work?
A. Yes, sir.
Q. Does it show the quantities done?
A. No; it shows the amount of money we got for the work.
Q. Does it show the prices?
A. No; but that is very regular. I estimate the amount of work from the prices we got for it.
Q. What was the usual price in your contract work?
A. 30 cents, about.
Q. Per square foot?
A. Yes, sir.
Q. You furnished all the material?
A. Yes, sir; sometimes it was a little less, depending on circumstances.
Q. Ordinarily how many men were employed on a contract?
A. Oh, that is irregular; from one man to seven.
Q. What would be the average?
A. I should think four to five.
Q. Did you give these contracts your personal attention?
A. Yes, sir.
Q. Did you have any assistant or foreman or superintendent?

A. No, sir; I was my own foreman.

Q. The men employed under you were ordinary laborers or skilled workmen?

A. Both.

Q. What wages did you pay?

A. From $1.50 to $3.50 a day.

Q. How many men would you employ at $1.50?

A. Oh, I can't tell that.

Q. How many men at $3.50?

A. Just one, and he is not getting that all the time.

178 Q. What material did you use in the construction of these contracts?

A. Portland cement and some kind of material to be cemented together.

Q. What was the cost of the Portland cement?

A. $3 to $3.75 a barrel.

Q. What else did you use besides Portland cement?

A. Sand, gravel, and broken stone.

Q. What did you pay for your sand?

A. Sand is $2.00 a load.

Q. How much constitutes a load?

A. About 27 cubic feet.

Q. And gravel and broken stone. What did you pay for that?

A. About 10 to 12 cents a cubic foot.

Q. In constructing a square—that is, 10 feet square of pavement—are you now able to say how much Portland cement you used?

A. Oh, that runs from one to two barrels of Portland cement.

Q. What causes it to vary?

A. The man that does the work.

Q. How much sand would you use in that quantity, in 100 square feet?

A. I can tell——

Mr. JUDSON: Do you claim to recover profits?

Mr. YOUNG: Our bill asks for profits.

Q. We will ask your conclusion as to what profits you made. How much labor, how much sand, would you use in a definite area of 100 square feet?

A. That is never regular; it depends on the thickness, the kind of sand and various things.

Q. Take the limits, large and small allowances.

A. Well, I can't tell.

Q. How many loads or parts of loads? If a man asked you to do 500 square feet wouldn't you know about how much sand you would require to do that work?

A. It would depend on the thickness of the work.

Q. An average thickness——

A. Say a load to 100 feet.

Q. How thick would that stratum of sand be?

A. About four inches.

179 Q. How much of broken stone and gravel?

A. That is about the same quantity.

Q. If you used the sand to that extent you would use gravel or stone to the same extent, would you?

A. Yes.

Q. Would you be able to state the names of the persons for whom you did work under your partnership—all of them?

A. Yes, sir.

Q. Will you do that on time being given you?

A. Yes, sir.

Q. Will you be able to state the quantities?

A. Very close.

Q. You will do that on time being given you?

A. Yes, sir.

Q. And the prices you received for that work?

A. Yes, sir.

Q. From whom did you buy Portland cement?

A. Thorn & Hunkins, Goets & Cobb.

Q. And the gravel?

A. I bought that from Marshall.

Q. And the broken stone?

A. From W. R. Allen.

Q. And the sand?

A. From the teamsters.

Q. Any particular number or firm of teamsters?

A. Mostly from a man by the name of Knudson, but all these amounts would not be any indication of my business, for the very reason that I did lots of work and that has nothing to do with it and was kept separate one from the other.

Q. You mean work other than pavements?

A. Yes; I mean separated—the work that comes under pavement-work and cellar-work and other things in separating my business from the partnership business.

Q. That would not alter the case, however, of what you did buy?

A. Oh, the cost by the yard—the total quantity—it would not help anything towards the total quantity.

Q. I am getting at the cost of the material that you used in putting down this concrete-work.

A. All right.

Q. Have you formed any theory or estimate as to the actual
180 cost of these jobs that you did—of each one?

A. Yes, sir.

Q. What is your estimate?

A. That has been varying from 18 to 25 cents a square foot; that depends on circumstances and the nature of the jobs.

Q. What does that depend on?

A. How much work there is to do; how much digging; how far it is to the hole; what kind of materials are at hand that will not cost him anything, etc.

Q. Taking jobs of work at 18 cents, what are the limits of the cost? How do you arrive at the conclusion that you can do it for 18 cents?

A. There is labor.

Q. What part of the 18 cents will the labor be?

A. That varies from four to ten cents a foot; four is cheap and ten is dear.

Q. I am speaking in reference to jobs; not the dearest.

A. The cheapest is four.

Q. The next item is Portland cement. How much a foot do you estimate you can do the cheapest job at 18 cents? What will the Portland cement amount to?

A. About five cents a foot, and the dearest——

Q. I am speaking about the cheapest.

A. I wish to give both; 7 or 8.

Q. Now sand; take a load.

A. Two cents a square foot for sand, and for broken stone it comes sometimes up to 5 cents a square foot.

Q. Sometimes not?

A. It depends on circumstances.

Q. I am speaking of the cheapest.

A. Oh, the cheapest is—you can make concrete out of Portland cement and sand and out of Portland cement and cinders and out of Portland cement and gravel and out of Portland cement and broken granite. Now which do you wish?

Q. Any other expenses in reaching those estimates?

A. Yes; you have to buy your shovels and pay out lots to
181 hire men to do collecting and to hire men to solicit work and to keep up repairs and to pay for wagons and to pay for a boy to take care of them, and there are a hundred different things that I can save lots of time by telling about a fair average.

Q. You- estimate was about 18 cents for the jobs?

A. Yes, sir.

(By Mr. JUDSON:)

Q. 18 cents per what?

A. Per square foot for the material and expenses for the cheapest, and 25 cents for the dearest.

Q. How much does your granitoid cost you per cubic foot?

A. I suppose you are asking to find out my business.

COUNSEL: No; it relates to this question.

A. I am not quite sure myself what it costs to pay freight and the men to crush it; it would not be a fair average; it must be what it costs me to get the machinery in and keep it in repair; so I think 18 cents a square foot is a pretty fair estimate.

Q. How much does crushed granite cost you per foot?

A. About 18 cents, as near as I can tell.

Q. How many cubic feet are in a ton of granite?

A. About 100 cubic feet.

Q. How many pounds in a ton of granite?

A. A cubic foot weighs 100 pounds, and you can calculate 20 cubic feet would be a ton.

Q. Did you ever construct a pavement that cost you as much as 25 cents per square foot?

A. No; I do not know of any that came to that; I think they have come as high as 22½—that is, of the usual thickness.

Q. You bought some of your granite from Mr. Allen, did you not?

Objected to. This patent has nothing to do with the com-
182 position of pavements. There is no claim with reference to a pavement as such, but it refers simply to a particular method of separating into blocks.

Examined by Mr. YOUNG:

Q. I would like to ask a question on the other point. I will ask you to state your business on the 27th of May, 1879. You have laid in the city of St. Louis, Missouri, concrete pavement in this way, by laying concrete between scantling or blocks, then allowing it to set, and then taking up the scantling and moving it back, making another block, and after that is set finishing off the two blocks with a thin coat of concrete and then taking the trowel or a sharp instrument and cut simply over where the scantling was for the purpose of effecting a joint in that pavement. Have you done that?

A. No, sir; because I can lay it just as well without it as with it, and am doing it to-day.

(By Mr. BLAIR:)

Q. Since the institution of the plaintiff's suit against you, did you issue a notice in writing or otherwise to any of your customers?

A. Yes, sir.

Q. I will ask you to look at this paper. (Paper shown to witness.)

A. "Certain parties are trying to force in their imitations by trumping up an abandoned patent." I wish to say what I meant by that. Mr. Howell brought suit against me and——

Q. Read it.

A. "We simply say we refused to buy said patent years ago because it is worthless, and as in the past so in the future we shall fully protect our patrons"

Q. To whom did you refer in that notice?

A. Any party who thought it a patent to prevent us from doing what we have been doing, on the supposition that this is the best. Russ laid concrete in blocks like Schillinger and put a piece of wood between in place of tar paper, and I thought if I was following that I was doing what I had a right to do, and the fact that we are permitted on one side of the curb was in my estimation nothing.

Now, I say what made the other side have authority to put
183 stone on one side, on top of that pavement? I say that has nothing to do. It would not infringe, and I am laying blocks for footways to-day in the same way that answer exactly the same purpose.

Q. You started out awhile ago to say why you used the word "abandoned."

A. Because they began a suit, and I was willing to buy it then as much as lately; because I thought I was right, but since they

dropped the suit, and I thought I would not run any risks on the enjoined pavement, and I used paper because I could not find wood of the right shape, but finally found it.

Mr. KNIGHT: How did the paper work?

A. It didn't do what I wanted it to do.

Q. What patent do you refer to in this expression "abandoned patent"?

A. The Schillinger patent.

Mr. BLAIR: I ask a rule on the witness for all these memoranda, vouchers, and papers that he can gather up.

Cross-examination by Mr. JUDSON:

Q. Something was said about the destruction of papers. Please state under what circumstances papers of yours have been destroyed.

A. Well, these were old receipts of mine for years that I thought of no value and I have destroyed a good many; I can't say now—the books are destroyed, but they were of no use.

Q. Did you have any papers destroyed in reference to this patent or suit?

A. I have not destroyed or tried to hide anything that is material to this suit, but last night I got the box out, and when I could not find what I was looking for I was as much disappointed as anybody, because I would sooner have had it than not, because that year, although business is apparently the same as before, I estimated this at 15,000 instead of 10,000.

The MASTER: At the next meeting the defendant will be required to furnish the plaintiff with the names of all persons
184 for whom he has laid concrete pavement, such as is covered by this patent, from the 27th of May, 1879, down to the date of this decree, including the names of persons, as far as he is able, for whom the defendant has done this work, either as an individual or as a member of the firm; and he will also produce such books and memoranda as he has in his possession which contain facts or statements or matters concerning such work.

At this point the hearing of this cause was adjourned until May 17, 1887.

MAY 17, 1887.

Parties met, pursuant to adjournment, and the further taking of testimony was resumed as follows:

The examination of PRESTON M. BRUNER was continued as follows:

(By Mr. BLAIR:)

Q. What statements, Mr. Bruner, have you prepared or ready to submit in obedience to the order made at the last meeting? Please state what you have ready to offer—what statements.

A. I brought the books along from which I made the records, and these are the records I copied from the books.

Q. You have prepared and have ready to offer a statement?
A. Yes.
Q. What books have you brought?
A. I brought all my books—memorandum books—that I used for putting down the work done.
Q. What times do those books refer to?
A. 1884, 1885, 1886, and 1887; up to the date of the decision of the court.
Q. Have you any records relating to the work done prior to 1884?
A. Yes; a little; those are just what I can think of.
Q. I say have you any books?
A. No, sir.
Q. You have no books referring to work done prior to 1884?
A. No, sir.
185 Q. You simply depend upon your memory for the work done prior to 1884?
A. All that work done prior to 1884 I claim was not included in the decision.
Q. Have you any books prior to 1884 that refer to work which you do not consider as included in the decision?
A. I expect so. I didn't look for them particularly. I don't know that I have got any; there may be books from which I could find it out. The part that I said was missing in this book (indicating), one page of this, I found by looking over the time book; I could see when the men worked, and from that I got at the facts.
Q. You constructed sidewalks prior to 1884, didn't you?
A. Out of tiling nearly altogether. I said 15 jobs last time. I found only six.

(By Mr. JUDSON:)

Q. Six what?
A. Six distinct jobs during the time prior to 1884 that we made in blocks.

(By Mr. JUDSON:)

Q. That is, prior to 1884 you only had six jobs?
A. I don't say there ain't any more, but not very large. I got three big ones. I don't think there is another big one that I have not got; there may be a little one 6 x 4 that I could not think of. The big ones are on Dayton street, about 1,500 feet, for H. G. Brookings and neighbor.

(By Mr. BLAIR:)

Q. What number on Dayton street?
A. 2,900 and something. I don't know the exact number. There is another one on—I don't know as it is necessary to copy all those; they are here. It would save considerable time—for Captain somebody, on Washington avenue, 500; then I got three other ones, just small ones.

Q. In the statement that you have prepared you give the name of the person for whom you did the work?

A. I will give it.

Q. I want to ask you generally about the statement.

A. I give the man's name and the place.

186 Q. The number of the street?

A. Pretty close. It would have been an extremely lengthy job to do that. I could not do all that. I would have to go to every place and get the exact number and exact name; but nearly so.

Q. Did you give the quantity?

A. Yes, sir.

Q. Give the price?

A. No, sir.

Q. Have you got it divided into years?

A. Yes, sir.

Q. What is the quantity prior to 1884?

A. Prior to 1884, 37, 35—that is, 37 and 35 square feet.

Q. That is not shown in the books?

A. No, sir.

Q. You make that up from your memory?

A. Yes, sir.

Q. What is the aggregate for 1885?

A. It starts with 1884, 14,900.

(By the MASTER:)

Q. This first was prior to 1884?

A. Prior to 1884. I was laying tiles before, and just while doing that work—I did a few jobs—that I made the pavement of granitoid.

(By Mr. BLAIR:)

Q. The quantity for 1884?

A. 14,900.

Q. Does all of that appear in your books?

A. Yes, sir.

Q. Have you added any from memory?

A. No; from the books.

Q. The quantity for 1885?

A. 19,415.

Q. All those are shown from the books?

A. Yes.

Q. Are they not?

A. Yes, sir.

Q. The quantity for 1886?

A. 27,730.

Q. And 1887 up to the present time?

A. 6,050 up to the date of the decision. From that time I stopped interposing anything between the blocks.

Q. What time did your partnership begin?

A. About March 24, 1886.

Q. Have you your partnership books here?

A. No, sir. Yes, I have got the journal here; the day book, rather; day-book journal. I want to show this book that I tore the leaf out, for fear somebody might think I tore it out for some
187 purpose. This was in the waste pile in the cellar in a box, and when I looked at it it was torn out, but from the time book I can tell where we worked at the time and from that can tell what the quantity was. The way I did in these books, I wrote the people's name down I did the work for, and, when they paid me, drew a red line across it. Very simple, indeed, but answered my purpose.

(By Mr. JUDSON:)

Q. Were most of these jobs large or small, as a general thing?

A. I think I should say the average would be about 150 or 200 feet to the job. I may be near right and may not be right.

Q. About what would be the price of the average job?

A. Well, from 60 to 75 dollars, I should imagine.

(By Mr. BLAIR:)

Q. When did Mr. Treble work for you first?

A. I think in 1880.

Q. How long did he remain in your employment?

A. I can't tell exactly. I think it was a couple of years he was with me, and then he was away a year and then came back again and then quit again.

Q. He worked, then, for you from 1880 to 1882?

A. I can't tell exactly.

Q. In what capacity did he serve?

A. Well, he was foreman of a gang most of the time for laying the tiles and then he came back again on the tiling. He was with me nearly altogether while I was doing this tiling work. The year he quit, in about the middle of the summer, it was the same year, I believe, that I—the next year—that I commenced laying the granitoid—my new pavement.

Q. Did you lay any concrete pavement within the scope of this inquiry while he was with you?

A. That I can't tell now.

Q. Did you have any other foreman than Mr. Treble during the time he worked for you?

188 A. Yes; one of my other men was beginning to be foreman while he was with me, which was probably the cause he left me.

Q. Did you have work of all kinds sufficient to keep the gang of men employed all the time?

A. Well, I had generally the busy part of the year five or six men going; sometimes if I had a large job would have more for a short time.

Q. That was principally, you claim——

A. Laying tiles.

Q. What part of premises did you put tiling—sidewalking or cellars or stables?

A. Mostly in brick walks, the yard walks; did a good many sidewalks; small jobs they were most generally.

Q. Did you do any alley-work?

A. Not at that time. I have done alley-work since.

Q. What kind of work would you do in cellars?

A. Well, the ordinary cement floor.

Q. Was that tiling work?

A. No, sir; occasionally I laid tiles; a few jobs I laid tiling inside of buildings, like marble tiles, of course.

Q. Is any of this work that you reported in your statement for cellar-work?

A. No, sir; that wouldn't come under the decision. The intention is not to have any joints in cellars. We do everything we can to prevent it.

Q. As to work in breweries. How about that?

A. Same thing; don't want any joints.

Q. It is sheet-work, is it?

A. Yes, a section; only the sections are long, and in spite of not making any joints they will often show, even if you take special precaution to have two sheets stay together; they will separate along where the scantling was in spite of all endeavors, but the intention is not to have it.

Q. Did you do any advertising during the years 1881, 1882, and 1883?

A. I expect so. I have done advertising right along. I expect it would be less than it is there (referring to statement). I account for it on the theory that a man always think he owes less than his creditors do.

189

Q. Is this your handwriting, Mr. Bruner (indicating statement)?

A. Yes, sir.

Mr. BLAIR: If the court please, I think we may ask properly an opportunity to examine the books and statements in order to form a basis for any further inquiries we should wish to ask. I have not had an opportunity to examine the books or to examine the statement. The names here are not very legible.

Mr. KNIGHT: We have no objection.

The MASTER: There will be no difficulty about that.

Q. I would like to get a definition from the witness of what he considers as coming under the decision of the court. What, in your judgment, is the criterion or rule that distinguishes the work which you did that does not come under the inquiry from that which does?

A. Well, I understand the scope to be where you put something between the blocks temporarily or permanently. When you lay one block after another and put nothing between, just move your scantling back and lay another one right next to it, there is a joint in spite of all you can do, and it is a joint which can't come under the decision of this court. Now, cellar-work is done that way. Brewery floors are laid that way, and that is the way they do in New York and lots of the large cities; they are laying pavements

that way without being annoyed by anybody as infringers—all over the country they are laying that way. I thought I had a right to do that, but it was decided against me, and of course I have stopped it. I think it more desirable to do it without interposing anything, but it is not the only way, by any means.

Q. Then prior to 1884 you did work without interposing anything temporarily or permanently between the blocks except this
190 scantling?

A. That was not interposed between the block at all. You make a frame out of scantling for a block, and then when you want to lay another block against one side of that block you move the scantling away from that side and put it right against it.

Q. Then the scantling serves as a frame to hold the mass of concrete in shape until it sets some, or does it not?

—. They take that away, but it holds until you get ready to make the next block.

Q. They then take up the scantling?

A. Yes.

Q. And then put the next mass of concrete immediately adjacent to the block which is formed or set some?

A. Yes, sir; and there it will always crack.

Q. Then prior to 1884 you did some work upon that plan of proceedure?

A. Yes, sir.

Q. Which you have not mentioned here in your statement.

A. Yes, sir.

Q. And you have been doing that since?

A. Yes, and doing it now.

(By Mr. JUDSON:)

Q. I will ask a question. Mr. Bruner, have you undertaken to and have you stated in that statement all the pavements which you have laid since you commenced business up to the time of the decree of the court in which you have made joints by either a temporary or permanent interposition of any separating material whatever?

A. Yes, sir—that is to say, I never made any joints, didn't make the joints by interposing anything between the material or by cutting it down, which has been declared by some courts as an equivalent to the other.

Q. I included in the expression "temporary separating material" the use of the insertion and withdrawal of a trowel?

A. Now, I want to state here that where two blocks come
191 together, if you don't hinge and smooth it over with great care and work it with the point of a trowel the line will look jagged, so we have a groover and use a groover to make a mark on it, just like this (indicating). The line is on top. I showed before the court two grooves that were nearly half an inch deep. They were made on both sides of a block that had a joint where one was laid next the other without anything between. I wanted to show that when that block broke it would not follow either groove. I do not call that interposition, and those jobs that I have done that way I

didn't put in, because they don't control the groove at all. If you make the groove a little cross where the joist lay it will always break where the joist lay—not follow the groove. That is sufficiently plain that it does not control the joint. I can show hundreds of examples of that. So in some of those jobs I used a little groover and made such a mark so as to make a nice place where the joint is, and those jobs are not included. I did those jobs in the first years.

Q. In your present method your plan is to use the joist until the first or second blocks have been laid?

A. No, sir; when the first block is made I move that.

Q. (Continuing.) When the second is made then you cause it to be plastered—the entire surface of the two blocks?

A. I make each block complete.

Q. In finishing off, isn't the top coat or crust finished off smoothly and uniformly, all in one large block, and then a line of fracture indicated by a groover or a trowel?

A. Each block is made complete—the whole of it is made complete—and then you make another one. You don't make one and then make another one, and then go over the first and put a top coat on, but you make one and then make another, and where they come together use a groover. We don't use it now; simply stretch
192 a chalk line over where the joist was.

Q. What is the purpose of stretching the line; for the purpose of a joint or ornamentation?

A. That lines it out, and later on the crack will be where that chalk line is; we take great care to make the chalk line where the scantling was; if we don't it won't crack where we put the chalk line.

Q. In your present method of constructing these blocks do you finish the first block with the top course of veneer or finer material before you commence the second?

A. All complete; then stretch the chalk line; sometimes the block after the water is gone away looks rough and we finish it again, but are careful in finishing not to disturb that chalk line; of course, if we rub hard we would rub the line out and would have to make it over again, but to save time we are careful not to rub it out; we work up to that line; I want to say here that in this test I made before the court I worked against my own side, because that top coat I put on that block was actually made in one; that was not one block made and a top coat put on, and the next one made, but all in one where the top coat came together; I made the lower parts together, and the top part, the finish, was made all at once.

Mr. BLAIR: If the court please, I would ask to be given time to examine the books and his statement before proceeding to ask any further questions.

At this point the further hearing of this cause was adjourned until Thursday, June 6, 1887.

ST. LOUIS, *June* 6, 1887.

Parties met pursuant to adjournment. Present as at the last hearing.

The following stipulation was filed before the master:

193 Now comes the parties to the above-entitled cause and stipulate that the number of square feet of pavement manufactured by the complainant under the patent in suit, as construed by his honor Judge Thayer in his opinion on the interlocutory decree in this matter, is as follows:

Constructed in 1884	14,960	square feet.
Constructed in 1885	19,415	square feet.
Constructed in 1886	27,000	square feet.
Up to May 3 in 1887	6,050	square feet.
Amount agreed to by Bruner over and above the actual amount	7,575	square feet.
Total	75,000	square feet.

It is further stipulated that defendant realized as great a manufacturer's or business profit per square foot upon the whole amount of 75,000 square feet aforesaid as upon that constructed or made in the year 1886.

That the defendant does not admit that complainant is entitled to recover any portion of any such manufacturer's or business profit so realized.

(Signed by counsel.)

The examination of P. M. BRUNER was resumed as follows:

(By Mr. BLAIR:)

Q. Have you made an examination of your books with reference to the total amount of business you did of all kinds in 1886?

A. Yes, sir; about $35,000 worth.

Q. How much of that amount was realized from the pavement under consideration?

A. Close onto $8,000.

Q. Can you give it any more precisely than that?

A. No; not very readily.

Q. In constructing this pavement what material did you use?

A. Portland cement and crushed granite.

Q. How much Portland cement is required to make a
194 definite quantity, say 100 square feet?

A. Between a barrel and three-quarters and two barrels per 100 square feet—about two barrels.

Q. What is the cost of Portland cement delivered on the ground?

A. I suppose that will average probably $3.25 per barrel.

Q. What quantity of crushed granite would be required for 100 feet?

A. About 40 cubic feet.

Q. What would the preparation of the foundations cost per square foot?

A. From 3 to 4 cents.

Q. Is that kind of work let by contract?

A. No, sir; it comes into the regular work done in connection with the rest.

Q. Do you know of any contracts being let for that kind of work?

A. I never do it.

Q. What is required to prepare the foundation?

A. To dig out the dirt about 12 inches deep and to put in about eight inches of cinders.

Q. What would the cinders cost you?

A. A dollar a load.

Q. How many tons are in a load or fractions of tons?

A. I don't know.

Q. About how many?

A. I don't know.

Q. How many yards?

A. There are about 50 to 60 cubic feet.

Q. What class of labor would you employ in digging the foundation?

A. Any kind.

Q. Ordinary day laborers?

A. At times, and at times have the highest-priced men out. It is connected with our work, and I use whatever men are convenient.

Q. In putting down a job and completing a job, how large a force would you employ?

A. From 3 to 30 men. It depends on the size of the job.

Q. A job of a thousand square feet, how large a number of men would you employ?

195 A. That would depend on circumstances. I might employ three men and I might employ a dozen. It would depend on the character of the work.

Q. I am asking as to your contracts.

A. Either way; just whichever it happens.

Q. You sometimes do a job of a thousand feet with three men, don't you?

A. Yes, sir; sometimes.

Q. And how many feet would three men lay in a day?

A. About 200.

Q. What class of labor would you use?

A. All kinds—that is, I have got some men to do every part of the work.

Q. What wages do you pay your men?

A. From $1.75 to $3.25.

Q. In employing 5 to 6 men, how many would there be at $3.25?

A. One.

Q. And he would be the foreman, wouldn't he?

A. Yes, sir.

Q. And the rest would be——

A. Some at $2.00; some at $1.75.

Q. What is the market price of granitoid (crushed granite)?

A. It is not in the market. I calculate the cost is somewhere in the neighborhood of 18 cents a cubic foot.

Q. Do you know the market price?

A. There is no market price for it.

Q. Has anybody in the city ever bought any besides yourself?

A. Yes, sir.

Q. Do you know what they paid?

A. No.

Q. Have you ever bought any?

A. Yes.

Q. Did you buy your crushed granite or do you crush it yourself?

A. I crush it myself.

Q. Are you able to get it cheaper by crushing it yourself than by buying it?

A. No, sir; I don't think I am—maybe not so cheap.

Q. You, then, prefer to crush it, because it costs more?

A. No; but because I can get it as I want it at once. I
196 see what you are getting at and I will answer without your asking. I paid a dollar a tone for the crushed granite at the quarry a few years ago, and some other parties bought it at pretty near the same figure, which forms their estimate of the cost, but I guaranteed the interest, the wear and tear of the machinery which did the crushing, and therefore afterwards had to pay interest and wear and tear on what they used, besides paying upon what I used.

Q. Your answer is that you bought crushed granite a few years ago at a dollar a ton at the quarry?

A. Yes.

Q. Where is that quarry?

A. Middlebrook.

Q. What is the freight per car, not your freight, but generally?

A. Freight is a dollar a ton.

Q. What is your freight per car?

A. It is a dollar a ton, but it depends upon how much you have on the car.

Q. The price is, then, $2.00 on board the cars to St. Louis?

A. Plus the switching, $2.00 per car; and then there is hauling from the car and hauling from the place of unloading to where you use it.

Q. You said the price of switching was $2.00; you don't mean to say $2.00 per ton?

A. To the car.

Q. How many tons were there in a car?

A. About 18 tons.

Q. What is the market price for hauling a lot of freight down from the car?

A. I pay a dollar to haul it from the car, and another dollar to haul it where we want it, and a dollar per load—a two-horse load.

Q. How much would they haul?

A. About 30 cubic feet.

Q. How heavy would that be; how many cubic feet in a ton?

A. That load would weigh probably 3,500 pounds—from 3,300 to 3,500 pounds.

Q. The items of cost, then, in the construction—I mean by items the cost in the construction of the pavement—are, first, the
197 excavation; second, the crushed granite; third, the Portland cement; fourth, the labor of putting it down. Are not these the principle items of cost? Have you made an estimate of how much they amount to in the aggregate—these principal items of cost?

A. Yes; I know pretty well.

Q. State it.

A. It is about 18 to 20 cents a foot regularly; 18 to 20 cents a foot if the dirt is to be hauled far, running up to 22 cents. If everything is most favorable, it will be 18 cents a square foot. That is the actual cost in a sidewalk.

(By Mr. JUDSON:)

Q. Does that include interest on the capital invested?

A. No, sir; that is just the difference between the material and labor.

Q. Does that include office expenses of your business?

A. Nothing of that kind; just the difference between what goes there and what is received for the work.

(By Mr. BLAIR:)

Q. In your operations of last year you supplied your crushed granite from your crusher, did you?

A. Yes, sir.

Q. What is the capacity of your crusher per day?

A. About a car-load per day.

Q. About a car-load a day?

A. About 20 tons per day.

Q. How many men are required to operate the crusher?

A. Five.

Q. What do they do?

A. Break stone and put it in around the boiler.

Q. Is it not true that your crusher will turn out a much larger amount than that per day?

A. I never crushed any more than that. We never had a call for more than that, and I keep these men regularly. I can't send them off if they run short of work. We pay for so many men, and they will crush a car-load a day; maybe a little more they crush frequently or not at all. You can't send off an engineer. You hire him, and when you want him or other men there they have to go there to go to work.

198 Q. You had other work, didn't you, in which crushed granite was required?

A. Yes; you might say there is four dollars a load, and you can

figure on the hauling from the car to the storing place and from the storing place to the place where you use it.

Q. In a day's run how many cubic feet were there—in a day's run of your crusher you crushed 20 tons?

A. That is 40,000 pounds, and there would be——

Q. That would be 400 cubic feet, wouldn't it, in a day?

A. About that; yes.

Q. And that would make how much?

A. Something like 1,200 square feet of pavement that would make.

Q. So in order to supply all the crushed granite that you used in 1886 you would have to run about 25 days, would you not? Your statement is you made——

A. For the sidewalk?

Q. Yes; in the course of 20 to 25 days you could crush all that was required?

A. 1,200; yes.

Q. But all the incidental expenses of engineer and labor would be limited to about 20 to 25 days work, wouldn't it?

A. No; it would not, because we would put all the labor to cleaning out the pits and all such work that comes in. We would put it off on other work and not on this.

Q. But I am ascertaining the amount of time actually required by the engineer and handlers of granite to be employed in the granitoid work—say from 20 to 25 days.

A. Yes.

Mr. JUDSON: We, of course, object to this testimony, except on the assumption that it is preliminary and is a part of the effort to show what the profit is.

The MASTER: I understand that to be the purpose of the introduction of the testimony.

199 WITNESS: The cost of granite per cubic foot—the cost of the pavement by the square foot—is a thing that is very difficult to understand—the full length and breadth of it—but I have given it at what you will find to be the cost after you have gone through with it.

Q. I simply want the data that you used yourself in coming to a conclusion. Is there any other item of expense that you have omitted?

A. Yes, the capital invested.

Q. I am not now asking that; just confine your testimony to the work, the cost of granite and the work.

A. Well, I can't think of anything just now except superintendence, and that is not a big item.

Q. Now, coming to the other charges incidental to this work, what do you claim, not what you claimed, but what existed?

A. The capital invested will be one thing; the expense of running the whole thing, furnishing the tools, teams, superintendence, and the wear and tear.

(By Mr. JUDSON:)

Q. How about the expense of soliciting business?

A. Well, that and advertising; everybody knows what that is; they come in with the business.

(By Mr. BLAIR:)

Q. You say, first, superintendence, interest on capital, wear and tear, and what else?

A. Advertising. I looked over the expense account in October and November and December and that includes those things that the book-keeper put under that head, and they run to $500 for those three months.

Q. That is on your entire business?

A. Yes; and in January and February they were not so much, but April and May they were again the same amount.

Q. That is of this year?

A. Yes.

Q. We are considering last year?

A. Well, it is this year, too.

Q. How much advertising did you do in 1886?

200 A. I can't tell unless I look at the items.

Q. What papers did you advertise in?

A. A good many. The Trade Journal for one.

Q. Where is that published?

A. In this city.

Q. Was that to reach the public or the men in competition with you?

A. Well, both, I guess.

Q. What other paper besides the Trade Journal?

A. The Architectural Journal, I believe. I can't think of any others just now.

Q. Have you copies of those advertisements preserved?

Objected to. Objection overruled.

A. No.

Q. Do you know what you paid for advertising?

A. I don't recollect that.

Q. Wear and tear?

A. Well, that is an item that I paid in the spring; putting new linings into the crusher; that was mixed in with the work of putting it in, and the linings alone cost $90; putting in probably about half as much more.

Q. Was that last year or this year?

A. Last year.

Q. What time last year?

A. In the spring.

Q. That was soon after you bought the crusher, was not it?

A. Yes, sir.

Q. Then the beginning of 1886 you made some repairs, did you not?

A. Yes, sir.

Q. How can that wear and tear be all charged to the work of 1886?

A. Because they wore out during the year of 1886 and another part. The rollers wore out entire during the year, which were not put in last year, but they wore out all the same.

Q. You used the crusher for other purposes, didn't you, than for crushing for pavement?

A. Yes, sir.

Q. Would the use for 25 days wear out the rollers?

A. It would wear out the rollers largely. In this item of
201 cost there is $150, making six dollars a car for crushing.

Q. Well, ordinarily a month's use will not wear out the rollers, will it?

A. The first one wore out in 20 days' crushing of 20 cars' loads, and we got two that crushed 20 car-loads and one that crushed over 100.

Q. When was that replaced?

A. This spring.

Q. Not in 1886?

A. No.

Q. What was the cost of the crusher?

A. About $3,600 to $3,700, besides the setting up—that is, all the crushing machinery I mean—and then I paid $1,500 for the bins and such things as I have.

Q. That is the outfit—the bins and the crusher?

A. Yes.

Q. What charge did you make for superintendent?

A. $1,200 a year.

Q. Did you serve as your own superintendent in the matter?

A. Served as the company's superintendent.

Q. What company is that?

A. P. M. Bruner & Co.

Q. Is it an incorporated or unincorporated company?

A. An unincorporated company.

Q. Who are the members of the firm?

A. P. M. Bruner, S. P. McKelbey, and H. L. Haydell. I did not mention the teams just now in the supply of the outfit.

Q. Are you equally interested in the company as partners?

A. No, sir; I have a half interest and they have the other half.

Q. What teams have you got?

A. Two.

Q. What are they? What kind of teams?

A. A light team and a spring wagon.

Q. You say you have two teams—two pairs of horses?

A. No, sir; single teams.

Q. Two horses and two single teams?

A. Two horses and one spring wagon and a light wagon.

202 Cross-examination by Mr. KNIGHT, counsel for defendant:

Q. Do you sometimes have to repair pavements that you do without charging for?

A. Yes, sir.

Q. Does that form another item of expense of construction of this pavement?

A. Yes, considerable; but I have no idea how much.

Q. How does this occur?

A. Well, occasionally they get broke from causes which we know, and sometimes I can't so readily account for it; maybe the men do the work in a defective manner by neglecting to provide for the movement and so on.

Examined by Mr. JUDSON:

Q. You have been examined as to the cost of laying this pavement and the items of expenses which make up that cost. As I understand you, these items of expense which you first stated had nothing to do with the general expenses in conducting your business, did they?

A. No, sir.

Q. Then in determining what your manufacturer's profit is—that is, the profit of your business, and including the general expenses of conducting your business and the interest on the capital and the cost of the wear and tear and the advertising and the incidental expenses—what proportion of those incidental expenses of conducting your business would apply to the business which you have stated in these items of laying this patented pavement?

A. I estimate the incidental and extra expenses at 5 cents per square foot and calculate it to pay 5 cents per square foot profit.

Q. That is, after paying incidental expenses you would have left about 5 cents?

A. Of everything.

Q. That means the entire manufacturer's profit and business profit?

A. Yes, sir.

Q. Now, I understand that you have, since the decree of
203 this court, as well as before, laid pavement from plastic material without the interposition of either a temporary or permanent separating medium in forming the blocks?

A. Yes, sir.

Q. Now, please state to the master what, if any, difference in cost and price and the profit was there between working under the Schillinger patent as defined by the court in its opinion given at the time of the interlocutory decree in this case and working without any separating medium.

A. I now lay the blocks right against each other without anything between, simply indicate a place where the joint is by putting a chalk line across and rubbing it in to show where it is, and then I go to work and get a boy to chisel and groove in just as I used to make before——

Q. My question is——

A. I will answer it.

Q. Go on, then, in your own way.

A. And the boy grooved 2,000 square feet in one day he worked—that is, he made 44 grooves, which covered 2,000 square feet, and that cost me just a dollar and a half.

Q. How deep is the groove made by the boy in this way?

A. I calculate to have that very near to ⅜ths of an inch deep.

Q. Does or does not that form a joint or is it simply for the purpose of ornamentation?

A. Both. When you cut it with a chisel with a clean edge right along both sides it looks like the joint was intentional. The joint is there without any grooving or anything.

Q. My question is, Does your chiseling make any difference as far as the joint is concerned?

A. Oh, no; the same kind of joint as if I run the groove over it.

Q. So what is the additional expense in manufacture in making it this way as compared with making it as you made it prior to the interlocutory decree in this case?

A. This would make it about $1.50 in 2,000 feet; but then
204 I have another element in it: in making the grooves there which might be considered for the purposes of making a joint, which, however, is made for an ornamental purpose; when the groove is made and you wanted to work in the neighborhood you had to be very careful not to run your trowel over that or you would spoil the looks of it; but I don't in my present method need to look out for anything, but just work over the whole place and indicate the place where the joint is to be made, so you save in time there.

Q. When you use the word "joint" you mean the line to indicate the joint on the surface, don't you?

A. Yes, sir.

Q. So, then, you would estimate that outside of the saving to be reduced by this consideration which you have mentioned to be a dollar and a half per thousand feet?

A. Yes, sir.

Q. What would be the aggregate of that as compared with the total manufacture you have reported to-day?

A. $54.

Q. And this $54 you say should be reduced by the considerations that you have just mentioned?

A. Yes, sir.

Q. Can you give an approximate estimate of the amount to be deducted on that account?

A. No; that would be difficult to get at, but I know simply that a man need not look out for anything. He just smooths the whole pavement down where otherwise he has to be careful, just work up to this joint. If he works over it he has to take the groover and go back over it, and he has to go and raise the marks again that the groover made.

Q. Was there any gain or advantage or saving in the Schillinger

process as construed by the circuit court over the method you are now employing except in the particular you have named?

A. That is all.

Q. Is the character of your pavement, its composition, the price of labor, all made of these items you have mentioned, in any way reduced by anything in connection with the Schillinger
205 process as construed by the circuit court?

A. No. Everything else remains the same except now I don't put anything in between.

Q. The question is whether or not you inserted something between the blocks.

(By Mr. KNIGHT:)

Q. Isn't the omission of the separating medium a small item of expense that should be deducted?

A. Yes. The strips put in cost more than the cutting of the joint does. Now they cost 3 cents apiece for 44 blocks; that would be $1.25.

Q. How would it be if you used tar paper instead of strips?

A. Tar paper would be cheaper.

(By Mr. JUDSON:)

Q. By taking wedge-shaped strips of wood as you used them according to the testimony in this case, wouldn't the cost of such strips which you now save more than make up for the extra cost of labor of a boy of which you have spoken, or at least amount to as much as that?

A. Yes. The cost would, I think, about—a little less—cost a little less to put wooden strips in.

Q. You think there would be a slight saving connected with the Schillinger patent?

A. Yes.

(By Mr. KNIGHT:)

Q. Suppose you take off the saving there is in putting down the pavement and the strips, deduct that from the cost of the shaping of the blocks, how is it then?

A. It is all so very little that it is guess-work to answer one way or the other. I should think there would be a little saving, though.

Redirect examination by Mr. BLAIR, for plaintiff:

Q. How much of your chisel-work have you put down?

A. I have done all that is fit to do on Lindell and Finney, and I shall do the rest of it as I get ready.

Q. How much have you done already?

A. Oh, I have three to four thousand feet.

206 Q. All on Lindell avenue?

A. Most of it.

Q. That is what has been done since when?

A. Since the decree.

Q. When did you first discover or hit upon the method of making the pavement with this chisel process?

A. Well, I knew that long ago, but when I first used it I didn't make any joint at all—when I first laid a pavement in plastic shape I didn't make a joint at all—I laid them right against each other without pressing in anything at all, making a mark. I just worked out to the edge, and when I commenced in the granitoid pavement I did not know where to get these wooden strips spoken of in the Russ patent, and I had a couple of jobs, and in those jobs I used the thick brown paper, as stated in my testimony, and afterwards in marking off the blocks. Along this line was irregular, so I sent a man along to press those joints smooth and make them look entire, and from then I had an idea that that could be done; but as I thought the claims of the patent had been abandoned and I did not think it would hold if contested, from that time on I used wooden strips on the pavements.

Q. You never put it in practice until this spring?

A. No.

Q. This chiseling process has been tried practically for the first time this season?

A. Yes; except those few places I have spoken of.

Q. What has been the character of the weather since May 3; freezing or not?

A. Mild weather.

Q. We have had no freezing weather since then?

A. No.

Q. You say in this little work done where you employed the chiseling process there are joints between the blocks?

A. Yes, sir; there are joints.

Q. How are those joints made?

A. By chiseling—grooving in afterwards.

207 Q. Is it a solid sheet of pavement before the chiseling is done?

A. No, sir; I make a block and then lay the other one right next against it. It is laid in blocks.

Q. You lay it immediately, one after the other?

A. Yes, sir.

Q. Is the first of any two of these blocks set completely or is it still in a semi-plastic state?

A. The first one in the morning I make is made against the one made the night before and that one is set.

Q. But during the course of the day as you make one in succession to the other are they completely set and hardened?

A. No; they are not hard.

Q. They are very plastic or semi-plastic, are they not?

A. Neither. As quick as the water runs away they are set, in one sense.

Q. But not hardened?

A. Not hardened.

Q. And you interpose nothing between them?

A. No, sir.

Q. Have you taken up any of that pavement?

A. No, sir.

Q. Have you taken up any pavement you put down in this chiseling manner?

A. Not with a chisel, but made just the same without having the chisel groove in. I chisel that groove in to make a nice appearance.

Q. Is there the same certainty that the blocks will not adhere to each other without the interposition of some substance as there is with one?

A. Yes; in fact it is important to make them adhere and I will give the reason. When you make one block against the other that piece is put against each other, but they don't adhere; whereas when you make these two blocks in one block, then that don't make a joint, and when you make one piece against a standing scantling and another against it they never adhere. You can't make them adhere that way. I always knew that; but if you put tar
208 paper in between them they will not adhere more or less, and the old Russ method has this advantage: the blocks were tapered like a stopper in a bottle. That I have got to do without for the present.

Q. You say when one block is laid in a plastic condition against another block which is plastic, bearing directly against it, there is no adherence?

A. No, sir; there is none, and you can go the next day as quick as the block is hard enough to move and move it, and you can go any place and take it out from there, every block in succession. There is no adherence, I am satisfied, and if you pour water in it will run to the foundation.

Q. What will be the effect if water runs through and freezes?

A. Not bad; if the material is good it will affect it no more than any other stone.

Q. Are you able to say what effect freezing weather will have on this Lindell pavement?

A. It will have no effect.

Q. Are you able to say in advance what the effect will be?

A. Yes; and the reason for that is that I have got work which is six or seven years old with nothing between it and it is just as good as new made with tar paper in.

Q. Didn't you say a while ago that you had occasion to chisel some laid in that way some years ago because of a fracture and being irregular?

A. The joint was irregular, not the fracture or anything of the kind.

(By Mr. KNIGHT:)

Q. How is the joint formed—by shrinking? I refer to this joint made at Nugent's with paper, in that we had in the testimony.

A. Made this several years ago.

Q. You think a sufficient and satisfactory sidewalk may be laid without interposing anything between the blocks?

A. Yes, sir.

(By Mr. BLAIR:)

Q. Yet you prefer to have the Schillinger process?

A. No, sir. I say this Russ process is misunderstood by all who have ever examined it.

209 Q. What is the advantage of the Russ process over what you know of?

A. It makes a pavement block like a point or stopper of a bottle.

Q. What don't you build the Lindell pavement with the Russ process?

A. Because it is outside. That Russ patent anticipated Schillinger, I claim, and I had to stop it.

Q. Why did you not make the Lindell pavement according to the Russ process?

A. I dare not.

Q. Has Russ enjoined you?

A. No, but a later inventor did. I would like to put in this: that when I did this thing I was entirely honest.

(By Mr. JUDSON:)

Q. The question is, he wants to know, if this advantage is so slight, why you should use it.

A. I would give considerable to use the Russ method, but tar paper wouldn't give me a single advantage that my present method doesn't imply; but as long as the former is included in the latter I have to stop both.

(By Mr. BLAIR:)

Q. My question was this: Your statement was that process, without any substance intervening, is as good as the Schillinger process. I ask- then why you did not construct it without the intervening substance, and you said you preferred to use the Russ process, and I asked why you didn't use the Russ process, and now you say it is because you have been enjoined. Then your inference would be, according to your understanding of the decree of the court, that also includes the Russ process?

A. It includes the Russ process.

Mr. JUDSON: He said, and we claim, that we used the Russ process, and the court said that was an infringement of the Schillinger patent, and therefore we stopped using it.

Q. In the pavement you have been making for the last three or four years is the construction such that the water can run

210 down between the joints?

A. It seems to be an idea with people, and the judges seem to have formed it, too, that that would ruin a pavement; it don't ruin stone and it don't ruin a good artificial pavement; it is a misconception. I don't want a water-tight joint.

At this point the further hearing of testimony in this case was adjourned until to-morrow at 10.30 o'clock.

ST. LOUIS, *June* 7, 1887.

Parties met pursuant to adjournment.
Present as before.

WILLIAM SHANNON, being duly sworn and examined, testified as follows:

(By Mr. BLAIR:)

Q. You are the plaintiff in this case?
A. Yes, sir.
Q. What is your business?
A. I am engaged in putting down pavements—concrete pavements—in the city of St. Louis.
Q. You lay pavements under the Schillinger patent?
A. Yes, sir.
Q. Can you state the average cost of pavements according to prices and material in this city?

Mr. Judson objects to the question, as the obvious purpose of it is to show what Mr. Shannon either can make or what Mr. Bruner might have made if he had been diligent, and the question is illegal on that account and incompetent.
Objection sustained and exception taken.

Q. Do you know what it costs per square foot to excavate the base and construct a foundation for Schillinger pavement?

Objected to on the same ground as before. Objection sustained and exception taken.

Q. Do you know the market price of cement?

211 Same objection.

A. Yes, sir.
Q. What is the price?

Objected to. Objection sustained.

Q. What is the price of crushed granite?

Same objection. Ruling, and exceptions.

Mr. JUDSON: It is understood that these questions relate to the year 1886.

Q. What was the general price for hauling sand, cement, and crushed granite last year?

Objected to. Sustained, and exception taken.

Q. How many square feet of pavement constructed according to the Schillinger patent can five men and a foreman lay down in a day?

Objected to. Objection overruled.

A. Well, that is, men on a big job will average about 400 feet a day.

The MASTER: What do you mean by a big job?

The WITNESS: Well, a job where we can work two or three days. On little bits of jobs of course they won't lay as much, because in moving around and getting ready it takes up time.

Q. How much granitoid is required for 100 square feet?

A. Granitoid isn't required.

Q. I mean crushed granite?

A. About from 30 to 33 feet.

Q. Cubic feet?

A. Cubic feet; yes, sir.

Q. Then your theory is that one cubic foot of crushed granite is sufficient for three square feet of pavement?

A. Yes, sir.

Q. How many barrels of cement are required in the construction of 100 square feet?

A. Two barrels.

Q. What wages are paid?

Objected to. Objection sustained and exception taken.

212 Q. What were the prevalent prices of that class of labor in 1886?

Objected to. Objection sustained and exception taken.

Q. Can you state, considering the labor, cost of material, the cost per square foot of a Schillinger pavement in 1886?

Objected to as irrelevant and incompetent and as directed only to the issue of what might have been made by the infringer and not what was actually made, and on the further ground that it includes the estimate of the witness first on the elements which have been already excluded.

Objected to. Objection sustained and exception saved.

P. M. BRUNER, recalled, testified as follows:

(By Mr. BLAIR:)

Q. Mr. Bruner, referring to the expenses of the general character mentioned by you yesterday, I will ask you were they not incidental to your entire business and not solely to the pavement business?

A. No, sir; as far as I understand you.

Q. I don't think you understand me. You mentioned yesterday expenses of a general character, as advertising, superintendence, wear and tear. Are they not chargeable to your entire business and not to the granitoid business alone?

A. Yes, sir; but where I stated the cost of the sidewalk business I stated their proportionate cost only. I have given you a statement of how much work I did, how many dollars' worth of sidewalk

business and how many dollars' worth of granitoid work,
213 which you have failed to bring up and which I would like to see the light of day, and in it I made a deduction in favor of what expenses should be charged to the other part of the business.

Q. What was your general business, say, a year?

A. $25,000 in round numbers.

Q. And in the granitoid business?

A. The sidewalk part was $8,000, and the other part was $11,000.

Q. With reference to the work on Lindell avenue and work that you have constructed since of concrete, do you use wooden strips around the joints?

A. No, sir.

Q. Did you use anything to give a beveled form to the under side?

A. No, sir.

Q. Do you use plaster?

A. No, sir.

Q. In constructing pavements as you now make them on Lindell avenue, do you ram the concrete after it is put in position?

A. Yes, sir.

Q. What is the purpose of that?

A. To consolidate it.

Q. Make it more compact?

A. Yes, sir.

Q. Now do you find that it causes any union or adherence of one block with another?

A. It does not; you can take each block up; that has been brought out by every witness and in the general testimony.

(By Mr. KNIGHT:)

Q. How do you mean take them up; do you mean take one out without disturbing the others?

A. You can't take up the first one, but when you have got hold of it you can keep on taking one up after another.

Q. I wish to read from your former testimony and ask you if your statements there were correct. The first extract is in your reply in interrogatory No. 14, defendant's testimony. I will begin in the middle of the answer: "I laid several pavements after that method, but the experiment was not satisfactory to me.
214 The reason is this that when you make on block the face of it is raised, a proportion of the pieces you use of the concrete are baked, and when you lay the paper there against it and put the other block against it and hammer the stuff down to get it solid the pieces will squeeze through the paper into the holes of the previous block and wedge, sort of saw-teeth fashion." I will read further an abstract in your reply to question 26: "Now, I want to say if you ram too hard at one place close to the other block you consolidate the stuff, and also force the bottom of it against the neighboring block and the neighboring block bulges up a little, and this paper will allow it to yield and fit right in there, and it is under-

cut, and the block, even if it do not drive the paper into the adjoining block, will press over enough to bulge out the neighboring block, so that it is practically undercut, and unless the blocks are so made that all the sides are practically parallel without interlocking anywhere they will not come out; you cannot remove them or leave room next each other without injury; whereas if you make a joint that is beveled so as to make all the blocks bigger at the top than at the bottom, as, for example, with this construction, then they can be removed, and they will move in each other like natural stones." In 27th question you say: "The paper would be pressed into the interstices of the adjoining block? A. Yes, sir. 28. What causes this? A. Pressure that is required to consolidate your concrete. We have a heavy iron rammer and ram the stuff down. 29. You ram the stuff down on the block you are making? A. Yes, sir. 30 Q. The block adjoining this has been made and become hardened? A. Well, not hardened, but stiff enough to hold its shape. 31 Q. That is, when the piece of wood has been removed there is nothing permanent there to prevent the paper being forced into the adjoining block, as I
215 understand? A. No; if you would wait two days that adjoining block would get hard enough so you could ram it as you care to without any danger of its losing its shape, but it is not safe to do so before the next day. 32 Q. Would it be practicable to wait until the next day? A. Sometimes not; you sometimes want to finish a job in one day. 33 Q. What now is necessary to prevent the interlocking of the blocks as you are putting them down? A. I mould my blocks according to the usual fashion, which has been so often explained, and where otherwise I would have simply my wooden strip for a guide I put inside of that this piece of wood; then I fill in as usual, and then when I take my guide away I peel this piece off; that undercuts the block by the bevel, and then I take concrete of a poorer quality made of various things—lime and cement, Portland cement and sand, plaster of Paris and sand, or most anything that makes some kind of hard material that has some binding qualities—and put that against the sides of the new block to give that part just the same bevel as the wood would have if it remained in there. Instead of having a wooden strip I practically have a concrete strip. Q. 34. Is this concrete of the same permanent nature as that of which the block is composed? A. No, sir; it is purposely of a poorer quality of cement or lime or whatever binding material is used to make it substantially weaker than the rest of the block so it can crumble if there is any occasion. 35 Q. And this is to allow one block to be removed without destroying it, and also to allow the blocks to raise independently in cold weather in case of frosts? A. Yes, sir."

My question was if your statements in your former answers which I have just read were correct.

A. Well, they look formidable in a law point of view; in a tech-
nical point of view they are all strictly so. In the first place,
216 I say the blocks are like two saw-plates with teeth; that don't prove that the plates stick together so that they cannot move. I admit my way is not as satisfactory to me now as if the

blocks were beveled, but they are as good as the Schillinger method of putting in tar paper. The blocks will move, and I have some of the best pavements made in the city in that way, but theoretically I don't consider it as good as the beveled block which Russ showed plainly how to make.

Q. Did Schillinger use a beveled block?

A. Never; the paper will do exactly what I say there. Another thing, here this represents blocks just the way they come together, and that represents the way I used to make it. Instead of putting something in between when I ram it, I don't ram it close when I get close to the joint. I don't see that the decision of the court requires it. I ram it hard enough at the weakest point, or not so hard, but it will answer pretty much the same thing as a wooden strip would, because I think there is no infringement there and the difference is in ramming it. Then there is another thing on the subject of a groover. My attorneys told me after the decision that I could use this groover to make a joint between the blocks, and it looked sort of neat, but I thought I would steer from that point as far as possible, because it looks as if it should be broke at that point, so I take a charlk line and press it in, as shown at the red mark, which nobody can see, and it can't have no effect to control the joint, as illustrated there, and I would state further, from the point of infringement, and they allowed me to.

Q. Who allowed you?

A. My lawyers said the decision—said the court would allow it.

(By Mr. BLAIR:)

Q. Going around the Schillinger patent that way?

A. Yes; we were speaking about the joint business yester-
217 day that I chiseled out, and I looked at a deep joint made with this kind of a groover, so I wait until the pavement is all complete and then I go back with the chisel and hammer and I make such a groove as I specified yesterday. It is not as it might have been inferred yesterday that I was getting up any invention to dodge this. I am doing just the old thing, but with a chisel now, because I am not allowed to do it while that pavement is in process of making. If there is any other point to contradict anything I have said I would like to have it brought up.

(By Mr. YOUNG:)

Q. Don't you make a groove or indentation right over where the scantling was when you formed the block?

A. Yes.

Q. Directly over it?

A. Yes. Now, if I don't do that, there will be a crack there that looks saw-teeth fashion on top, and by pressing it in it makes a nice joint.

Q. Ornamental?

A. And my pavement—this will illustrate the number of places where I don't get the joint at the right place, but the joints came

where the scantling was and not over the line. This is to show the line don't have any influence in controlling the crack.

Q. Is this scantling placed temporarily between the blocks now?

A. No; we make one block, and when we want to make the next block we pull the scantling back the distance of another block and make the next block right against the other, and there is nothing interposed between the blocks at any time.

Q. You form these blocks, as far as the scantling is concerned, the same way you always did?

A. Yes; certainly, except without the interposition of anything.

Q. Not permanent?

Mr. JUDSON: Temporarily, he said.

Mr. YOUNG: Temporarily when you are putting it down?

218 Mr. JUDSON: I know, but that is not interposition.

(By Mr. BLAIR:)

Q. Who was your foreman last year, in 1886?

A. J. B. Grimm.

Q. Where does he live?

A. I don't know the exact number; Cass avenue and 18th; in that vicinity.

Q. Is he in your employment now?

A. Yes.

Q. Who was your book-keeper last year, in 1886?

A. I can't think of the name now. Bradford is the name.

Q. What is his given name?

A. I forget.

Q. Where does he live?

A. I don't know. He went off traveling for a Chicago house the last I knew.

(The paper referred to by the witness in illustration of his testimony is marked Exhibit A and the iron groovers were marked Exhibits B and C.)

Q. Who employed the men to do this excavating work?

A. I did.

Q. Did you keep a pay-roll of wages of your employés?

A. Yes; it seems to be a sort of an unsatisfactory question what this has cost. I put down one job here. Occasionally I took notice of the cost of a job, just how much it does cost to keep the run of the business, to see whether sufficient material goes in and what it costs, and here is one of them, from which you can judge just about what the expenses are.

Q. Is that the original pay-roll?

A. There is no pay-roll; it is simply a memorandum I made of a certain job of work. Sometimes I am on a job a half a day, and then I go to another place, and I can't form a correct estimate, except with a great deal of trouble, just what it cost.

Q. Where is the memorandum or book from which you got that?

A. I have just a piece of paper like this on which it was written.

Q. Can't you bring that?
A. No; I copied this off.
Q. Why didn't you bring the original paper?
219 A. I thought this would answer the purpose. This refers to the job that I did for Estill McHenry.
Q. You made a memorandum at the time of what this cost, did you?
A. Yes.

Mr. YOUNG: We insist that he shall bring the original.

Q. It is in a book, is it?
A. No; it is not in a book, but on a slip of paper: Dirt, $8.80.

Mr. YOUNG: I object to this unless the witness brings the memoranda—the original document itself.

Examined by Mr. KNIGHT:

Q. You stated yesterday that the concrete that you bought—I mean that the amount you bought before you purchased the breaking machine outright—cost you $1.00 per ton at the mine?
A. Yes.
Q. And in addition you insured the machine as to the wear and tear, and that you had to repair it, and it cost you something. State about what that cost you. I wish to get at the additional cost of the granite.
A. I paid Mr. Allen a dollar a ton for the granite crushed, on the cars. I paid a dollar a ton freight to St. Louis. I paid $2.00 a car switching, which is equal to something like 15 cents a ton. Then we had, when the cars came here, to haul it away, dump it on a lot, and from there haul it to the place where we needed it, and that made two loads of hauling the 30 cubic feet, each weighing about 3,000 pounds, or about $1.50 a ton. The cost of the machinery down there was about $4,000. The taxes and interest we estimate at 10 per cent. That would be $400. The wear and tear and risk and repair we estimate at 10 per cent. as the general cost in doing that, and that would make $800. Now, we crushed about 80 cars or got 80 cars, and that would make this expense $10.00 a car of 15 tons, equal to about 70 cents a ton. Now, the cost of that is $4.20, and then there is 20 cubic feet in a ton, about, and that makes the cost about 21 cents a cubic foot.
220 Q. Did you pay for this wear and tear and repair of the machine?
A. I did.
Q. What did that cost you, about, in round figures?
A. I think it is $550 I paid.
Q. So in addition to the one dollar per ton at the mine that you paid for this granite there is to be added this $550, is there?
A. Yes, sir.
Q. Do you know of other parties getting granite that was crushed by the same machine at that time?
A. Yes, sir; there were other parties.

Q. What did they pay?
A. Well, about $2.50 here in the yard, I believe.
Q. What is the cost of the hauling?
A. The wagon and other cost of hauling?
Q. I mean from the mines to St. Louis.
A. A dollar a ton.
Q. How long was this business carried on in this way?
A. Until last spring.
Q. What is the length of time?
A. A couple of years.
Q. Is it your understanding that they were to get this granite at that price?
A. No; my understanding with Mr. Allen was that all the other parties should pay $2.50 at the quarry to pay for the wear and tear and interest.
Q. And he delivered it in St. Louis for $2.50?
A. Yes, sir.
Q. And you had an arrangement with Mr. Allen?
A. Yes, sir.
Q. By which he started this break machine?
A. And I agreed to reimburse, to pay him 10 per cent. interest on his money to keep the machine in repair or else buy it of him.

(By Mr. YOUNG:)

Q. Where did you get that paper from?
A. It is merely a statement; no book statement at all.
Q. No memorandum of anything?
A. No; I thought it would come out this morning that
221 Shannon would get granite cheaper than it cost, and I made this to show that if he had been charged as much as I it would cost him as much as I.

(By Mr. BLAIR:)

Q. You stated in your last explanation that crushed granite was delivered in the city at $2.50 a ton?
A. Yes, sir.

(By Mr. KNIGHT:)

Q. At your expense?
A. At my expense; and I paid $1.50 on top of that in the way of repairing the machine.

At this point an adjournment was had until May 8 at 10.30.

JUNE 8, 1887.

Parties met pursuant to adjournment.
Present as before.

Mr. YOUNG: Under equity rule 88 of U. S. Supreme Court we offer in evidence all the testimony taken upon the merits, its relevancy and competency to be determined when such evidence is read.

GEORGE A. HYMES, sworn and examined, testified as follows:

(By Mr. BLAIR:)

Q. Where do you live?
A. I live in St. Louis.
Q. What is your business?
A. Notary public.
Q. Have you had any experience in the construction of pavements?
A. I was interested in it for about a year, sir; a year ago.
Q. Where?
A. Here, in St. Louis.
Q. Are you familiar with the value and qualities of concrete pave ments?
A. Yes, sir; pretty much.
Q. Are you acquainted with the pavement known as the Schillinger pavement?
A. I am.
Q. What are the qualities of the pavement that render it desirable in the market?
222 A. Well, it looks very beautiful when it is finished; makes a nice, smooth, even surface and it is generally regarded as being very durable.
Q. Does it bear any resemblance to natural stone or not?
A. Looks very much like it; many people could not tell the difference.
Q. In what sized sheets or blocks is it usually laid?
A. Well, they lay them in 6 x 4, 5 x 8, 5 x 12; generally about those lengths, sir.
Q. As an expert in such matters, what, in your opinion, would be the result if such pavement—such concrete pavement—were laid in sheets or blocks as large as, say, 15 x 30?

Objected to; he has not qualified himself to speak on it.

Q. What familiarity have you with the qualities—physical qualities—of the concrete pavement known as the Schillinger pavement? What experience or observation have you had?
A. Well, I know nothing further than that I had some cement-work done for me when I was in the business, and I have seen a good deal of it. When I was interested in the stone business I naturally was interested in the cement business, as it was, in a measure, antagonistic, and I investigated it during that time.
Q. You say you have investigated it?
A. I have; at one time I thought of buying the Schillinger patent.
Q. What, in your judgment would be the result if the concrete pavement were laid in a continuous sheet?

Objected to, as the witness has not qualified himself to speak on that. Objection overruled.

A. If I were laying any myself I should have it laid in blocks.
Q. For what reason?

A. I think laid in a continuous sheet it would crack diagonally very badly.

223 Q. In your opinion to what extent would it be desirable in its cracked condition?

A. Well, I speak for myself; I would not have it that way if the cracks were not regular.

Q. Does the appearance of the pavement after completed and after undergoing the weather have something to do with its desirability?

Objected to. Objection sustained.

Q. What is a concrete pavement reasonably worth in the city of St. Louis, laid as the Schillinger pavement is laid?

Objected to as incompetent and irrelevant. Objection sustained.

WILLIAM SHANNON, recalled, testified as follows:

(By Mr. BLAIR:)

Q. What is your business, Mr. Shannon?

A. I am in the cement business putting down sidewalks.

Q. What kind of sidewalks?

A. What is known as the Schillinger pavement, constructed of crushed granite and Portland cement; gravel, sand, and Portland cement.

Q. What prices have you been receiving for the pavement constructed under the Schillinger patent?

Objected to.

Q. I will ask you if pavement constructed under the Schillinger patent isn't a concrete pavement.

A. Yes, sir.

Q. Is it not laid while the concrete is in a plastic condition?

A. Yes, sir.

Q. I will ask you if a pavement constructed of concrete, whatever may be the materials composing the concrete, laid in continuous sheets is a desirable pavement?

Objected to.

224 The MASTER: The question is whether concrete pavement laid in continuous sheets is a desirable pavement.

Mr. BLAIR: In sheets of, say, 15 feet by 30?

Objected to as irrelevant.

The MASTER: He may answer it.

A. It would not be a desirable pavement in my opinion.

Q. State why.

A. The fact that when it would freeze it would heave it up and break it in different directions.

Q. What sizes of blocks are found practicable and desirable?

A. 6 x 8, 6 x 12.

Q. In constructing concrete pavements composed of individual

blocks is it absolutely necessary, in order to avoid cracking by frost, to place some substance between adjacent blocks while they are yet in a plactic condition?

A. Yes, sir; it is.

Q. Do you know of any pavements made of plastic material, laid while in a plastic conditions, that have endured the action of the weather, where the blocks were laid immediately adjacent so as to touch each other, in which there is no cracking?

A. I don't know of any being laid to my knowledge. I have not any knowledge of any pavement being laid in that way in the city.

Q. Is there any demand for pavements laid in continuous sheets?

Objected to. Objection sustained.

Q. What prices have you been receiving for your Schillinger pavements, prices per foot?

Objected to. Sustained.

Q. What has been the cost of the Schillinger pavements that you have laid?

Objected to. Objection sustained.

Q. Considering the prices of crushed granite, cement, sand, and labor in the city of St. Louis in the last three years, what would you say to be the average cost or the range of cost per square foot
225 of concrete pavements laid according to the Schillinger method?

Objected to. Objection sustained.

Q. When you consider the value or utility of a pavement, a concrete pavement, laid in plastic condition and divided into blocks of the size in which such pavements are usually laid, but without tar paper or any equivalent interposed between the blocks, compared with a similar pavement constructed of like material, with such tar paper or equivalent interposed between the blocks—when you contrast the one style of pavement without the Schillinger improvement with the other, what do you say as to the difference of value or to what extent does the Schillinger patent contribute to a concrete pavement without it?

Objected to as calling for a legal conclusion from the witness. Objection overruled.

The WITNESS: Well, the pavement laid without any blocks—say 100 feet long and 12 feet wide—I would consider not worth half the amount that it would be laid in blocks so that they would move among one another. When the frost would get in they would heave up and go up and down the same as stone.

(By Mr. JUDSON:)

Q. Wouldn't a large block do the same thing?

A. Not if it was 100 feet long; it would burst all to pieces.

(By Mr. BLAIR:)

Q. State the value of one and state the value of the other in the market, if you know.

The MASTER: I don't think that is proper, to make a comparison of the difference in value.

Q. Mr. Shannon, since you have been the owner of this patent for the city of St. Louis and the county of St. Louis have you established a rate of license for other people?

A. No, sir.

Q. Why not?

A. Well, I preferred to do the work myself than give a license to anybody else.

226 Cross-examination by Mr. JUDSON, for defendant:

Q. How long have you held the title to this, Mr. Shannon?

A. Well, a year ago this last spring. I don't remember the date exactly.

Q. Who is your immediate predecessor?

A. Mr. Hull and brother.

Q. Did you buy the right from Mr. Hull; what did you pay him for that right?

Objected to. Objection overruled.

A. I paid Hull $200. There are a great many other expenses that I was to before I got the patent.

Q. These were expenses you assumed?

A. I was to a good deal of expense before I got the trade consummated; the actual money I paid Hull was $200 and interest.

Q. What other expense do you refer to?

A. I made a trip South that cost me a good deal of money.

Q. You made a trip to interview Hull about it?

A. Not to interview Hull, but other parties, to find out what I could and all about it.

Q. In order to investigate what you thought you could afford to pay for the patent, wasn't it?

A. No; to find out more who owned it than anything else. I did not know at the time when I made the trip South who owned the patent.

Q. Did you take some trouble to ascertain who owned the territorial right to St. Louis?

A. I did at first; yes.

Q. Where was Hull at the time you made the purchase?

A. In Arkansas.

Q. You went there to see him?

A. Yes; his brother was in Scranton, Pennsylvania.

Q. $200 was the price they fixed for their interest and the price you paid?

A. Yes, sir.

227 Q. Have you given any licenses since you acquired this right?

A. I gave one man a permit to lay a small walk.
Q. Who was that?
A. That was John Soell.
Q. Did you charge him anything for it?
A. Never got a cent for it.
Q. Didn't you charge him anything for it?
A. No.
Q. You gave that to him?
A. Yes; I gave it to him; he agreed to pay me for it some time or other, but I never rendered a bill and he never proposed or offered to pay it.
Q. How long ago was that?
A. That was in 1886, I believe; some time along in 1886.
Q. Did you give any other licenses?
A. No, sir.
Q. Where does Hull live—your predecessor?
A. I can't say where he lives. He is in business in Arkansas, though, I think.
Q. Two of them were there?
A. Yes.
Q. One in Arkansas, I believe, and the other, you said, in Pennsylvania?
A. Yes; or was a year ago.

(By Mr. KNIGHT:)

Q. What was the size of the pavement so laid under your permit?
A. I think 30 x 10; it was the first piece laid on Olive street, in front of Captain Yore's building.
Q. You gave permission to lay only one job?
A. That is all.

(By Mr. BLAIR:)

Q. At the time you bought this right from Hull he was a non-resident of St. Louis, was he?
A. His family lived here, but he was in business himself in Arkansas; at least, that is what he told me when he came up.
Q. Do you know what Hull paid for the right?

Objected to.

(By the MASTER:)

Q. Do you know from any other source other than Hull what he paid for it?
A. I have no way of knowing, only what Hull told me. He told me what it cost him.

The MASTER: I will sustain the objection.

(By Mr. KNIGHT:)

Q. You say Mr. Hull was here?
A. Yes, sir.

(By Mr. BLAIR:)

Q. State the value of one and state the value of the other in the market, if you know.

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Q. Do you know what Hull paid for the right?

Objected to.

(By the MASTER:)

Q. Do you know from any other source other than Hull what he paid for it?
A. I have no way of knowing, only what Hull told me. He told me what it cost him.

The MASTER: I will sustain the objection.

(By Mr. KNIGHT:)

Q. You say Mr. Hull was here?
A. Yes, sir.

228 Q. About the time you were buying?

A. He came up along about the time I got ready to close the trade with him.

At this point the hearing was adjourned until Friday, June 10th, at 10.30 a. m.

JUNE 18TH, 1887.

Parties met pursuant to adjournment.

Present: As before.

Testimony taken in the absence of the master by agreement between the parties, the complainant waiving objection to the testimony being introduced, but reserving exceptions as to competency, to be decided by the court.

Defendant's Testimony.

JAMES O'TOOLE, being examined, testified as follows:

(By Mr. KNIGHT:)

Q. What is your name, age, and business?

A. My name is James O'Toole; I was 25 years old in April last—the 9th day of April; I am engaged in the cement business.

Q. Who do you work for?

A. P. M. Bruner & Co.

Q. How long have you been working for P. M. Bruner & Co.?

A. About three years.

Q. What have you been engaged at during this time for them?

A. Well, for about 2½ years I have been their foreman.

Q. Are you acquainted with the method of putting down concrete pavements now practiced by P. M. Bruner & Co.?

A. Yes, sir.

Q. How is the pavement marked off in blocks?

A. Marked off in blocks?

Q. What with?

A. We are marking it off with a chalk line now.

Q. How do you do that? Just explain it.

229 A. We go to work and set a scantling of whatever height our sidewalks call for and put down our stuff, and after we have the stuff down and get that block finished we take away the scantling, and we put in two iron pivots at this joint. Then we just turn to work and slap the other stuff in against it and go to work and finish the next block all through until it is dry enough to finish. After that, why we take out those two iron pivots and draw our chalk line across the joint where the scantling was.

(By Mr. YOUNG:)

Q. Right over the scantling?

A. Over where the scantling was—where it was taken away from.

(By Mr. KNIGHT:)

Q. What are the iron pivots for—what are they for?

A. Just to guide us in making the joint, where the scantling was taken from.

Q. It didn't form a separation between the blocks?

A. No, sir.

Q. Then you put a chalk line right——

A. Where the pivots were taken out and the scantling was.

Q. And then pressed that chalk line into the concrete?

A. Yes, sir; to make a joint there, so where the joint would separate it wouldn't crack crooked.

Q. Make a mark there?

A. Yes. In smoot-ing over the top stuff if that line was not there it would crack a little irregular, but would crack about in the same place—may move over $\frac{1}{8}$ or $\frac{1}{2}$ of an inch or so.

Q. Did it ever crack alongside the line, or always crack where the line is?

A. Well, if you lost track of where you put in the line—if you lost track of the pivots—where we take out the scantling, if we don't happen to strike the same place it will crack alongside of the pivot, right where the pivot was, not where the line was. Sometimes in putting in those pivots we may have one at the upper end and
230 at the lower end wouldn't have it, and that would throw the line a fourth of an inch out, and it would crack where the scantling had been.

Q. Always made joints in this way?

A. Well, no; we have not.

Q. How did you make the joints before you used the line?

A. We used to make it the same way, only that we used to plaster it with sand between.

Q. Put something between the blocks?

A. Yes, sir; first used strips of wood, and they used to make a rather rough joint when they would break. After that we started to use sand.

Q. My questions have reference to the marking of the place between the blocks. How did you do that before you used the chalk line?

A. Just the same way; kept track of our joint, and just run an iron groover over it instead of the chalk line, just merely to make a prettier joint.

Q. Which is the quickest method, the chalk line or the groover?

A. The chalk line is a great deal quicker way, because we can go to work with a chalk line and put down four or five blocks without making a joint—just leave those pivots in; before we had to groove before we took away the scantling—leave our groove there instead of leaving the iron pivots. Now we don't have to do that. Then, after we run the iron groover over it it would become sort of hard, and just as soon as we would have the other block done would have to finish that to rub out the crease the iron groover would make.

Q. The chalk line would be the cheaper, being the quicker?

A. A great deal cheaper, I think; that is my idea.

Cross-examination by Mr. YOUNG:

Q. Are you in the employ of Mr. Bruner now?
A. Yes, sir.
Q. What salary are you getting?
A. $3.00 a day, sir.

231 In the absence of the master, Walter C. Carr, a notary public, by consent of both parties, administered the oath to the last-named witness, and also to Andy Johnson, S. P. McKelbey, and P. M. Bruner, and all objections to the swearing of the witnesses by said Carr, and also to the failure to swear said James O'Toole at the commencement of his testimony, are waived.

ANDY JOHNSON, sworn and examined, testified as follows:

(By Mr. JUDSON:)

Q. What is your name?
A. Andy Johnson.
Q. What is your business?
A. Cutting stone for P. M. Bruner & Co.
Q. You are in the employ of P. M. Bruner & Co., are you?
A. Yes, sir.
Q. Please explain, now, how you cut the stone—what way you do it.
A. Just the same as a stone-cutter would do it—with a chisel and a mallet.
Q. Is the stone hard when you cut it?
A. Yes, sir; I guess it is pretty hard.
Q. Do you have to use the mallet in cutting it?
A. Have to strike with the mallet.
Q. Where do you cut it?
A. On the sides; on both sides—north and south side of the sidewalk.
Q. You mean you cut it crosswise?
A. I cut it both ways.
Q. Well, now, where do you cut it? How do you know what line to cut it on?
A. They have got a little string. They run a string across, which throws a shadow mark there, and I put my straight-edge on each side of it and make two lines, and that I cut the groove.
Q. How deep is this groove that you cut?
A. Well, I guess about $\frac{3}{16}$ of an inch.
232 Q. And how wide is it?
A. About a quarter of an inch wide.
Q. How long does it take you to cut across the pavement?
A. I don't know how long it would take me to cut across the pavement, but I can cut about 50 of them joints in a day if I work right fast.
Q. How many feet would that be of pavement?
A. About eight feet—the width of the pavement.
Q. And how long? What would be the length of that pave-

ment over which you would cut in one day—that is, how long are the blocks?

A. The blocks are about 8 feet wide and about 6 feet long; that is the way they are set in.

Q. That is, the blocks are about 8 feet by 6?

A. Yes.

Q. And you would finish about 50 of them in a day?

A. Yes, sir; the joints—just the joints; not the sides with it.

Q. What do you mean by the sides?

A. I have to trim the edges of the sidewalk, and then when I get that done I start in cutting the joints—straighten the sides.

Q. But you would finish about 50 blocks of 8 feet by six in a day without doing anything on the sides of the blocks?

A. Yes, sir.

Q. That would be a separate job?

A. Yes, sir.

Q. That has nothing to do with the making of these joints that you speak about?

A. That is what I mean; with a chisel and hammer; that is what I do.

Q. Do you find that this line that is made for you, that it is always in the right place for you?

A. Always in the right place? How do you mean? I don't know how you mean.

Q. Does the crack always come along there where the chalk line was?

A. No, sir; I never see the crack at all; I don't know where it is going to crack at.

Q. Did you ever notice a crack running along near where
233 the chalk line is half an inch or an eighth of an inch away from it?

A. In some places I do; not very often. Some places it runs out maybe a half an inch. There is not many of them crack that way; they are all in one—one piece.

(By Mr. KNIGHT:)

Q. What wages do you get?

A. $1.50 a day.

Q. Doing this work?

A. Yes, sir.

Cross-examination by Mr. YOUNG:

Q. How old are you?

A. 18 years old.

Q. How long have you been working for Mr. Bruner?

A. I have been working for him now since the 18th of June, and I worked for him a year or so before—two or three years ago.

(By Mr. JUDSON:)

Q. What is your business; what is your trade before you went to Mr. Bruner?

A. I was a sawer in a planing mill.

(By Mr. KNIGHT:)

Q. 18th of June of what year that you began working for Mr. Bruner?

A. This year.

Q. 18th of June, this year?

A. Yes, sir; 18th of May, 1887, it was.

(By Mr. JUDSON:)

Q. Did you ever do any stone-cutting before you were employed by Mr. Bruner?

A. Yes, sir.

Q. How long?

A. About four or five months.

(By Mr. YOUNG:)

Q. You have been in this business less than a month?

A. Yes, sir.

P. M. BRUNER, being duly sworn and examined, testified as follows:

(By Mr. KNIGHT:)

Q. Are you the defendant in this case?

A. Yes, sir.

Q. I will get you to state, Mr. Bruner, what methods there are, that you can readily mention, that you could use in putting
234 down concrete pavement without using what is known as the Schillinger method.

A. Well, you can make blocks in some other place and bring there and lay them; you can make blocks as I do now, one after another, without putting anything in between to cause the separation; and you can lay alternate blocks, and in that case you can put something between when you fill in the other blocks, the alternate ones left; so there are three different ways.

Q. In making alternate blocks, would you allow the blocks to harden before the intermediate ones are put down?

A. Let them harden until they get hard, until they are thoroughly hard, which may be in a day, and you can make them the second day or the third day, and then lay a soft plastic block against the hard one, and then interpose a piece of tar paper, or wooden strip, or sand, or whatever you choose.

Q. And also lay them without interposing anything?

A. Yes, sir. This job here on 7th and Olive, which I gave in as one of my infringements, really was not one; that was laid that way. I made on- day every other block, and the next day I came and filled the other blocks in.

Q. Now, cannot a pavement also be laid in one continuous sheet?

A. It could be; it can be laid in—you can lay a pavement 100

feet long, and make it whole too, by obeying just the same laws that a stone-mason obeys in laying a stone pavement of that size.

Q. Just make it thick enough?

A. Strong enough and thick enough, in proportion to its size.

Q. You can then mark it off in sections with a chalk line, or with a groover that don't go down but a short distance, to give it the appearance of natural stone?

A. Yes; but the object generally is to lay the pavements in as big sheets or blocks as possible; the owners pay an extra price for that; it is not an object to make little joints.

235 Q. This continuous sheet you speak of, then, is the fourth method that could be used in lieu of the Schillinger method?

A. Yes. I saw in Philadelphia blocks 20 by 40 that were down for two or three years without a flaw in them around their new city hall. They were laid, too, without interposing anything. They were made outside of the Schillinger method.

(By Mr. JUDSON:)

Q. Now, taking up these several methods, you first mentioned the method of making blocks separate and bringing them there?

A. Yes.

Q. Please compare that method with the method—so-called Schillinger method—of interposing a temporary or permanent separating material, and explain what, if any, advantages there are in the one over the other.

A. That is in making the blocks somewhere and——

Q. Making the blocks somewhere else, complete; then bringing the blocks to the place where the pavement is to be laid and there laying them. Now, please explain what are the respective gains and losses in cost, comparing one with the other.

A. Well, in making large blocks I have done very little. It is considerable of a guess; merely an estimate. I have made some blocks on purpose as an experiment, and I have allowed my partner, Mr. McKelbey, who is in the stone business, to lay them for me to see practically how it would work. It is evident if you make all the blocks in one place you can employ machinery for doing the mixing. You can use moulds that are easily put together and set in place, and you can manufacture the blocks for less than you can on the ground. The disadvantage you have is that you have got afterwards to take them and lay them in some other place Nor, I can manufacture stone for the same price that Mr. McKelbey can buy them—natural stone—and he claims he can lay my stone

236 cheaper than he can lay his own, and it his opinion——

Mr. JUDSON: You need not give that.

WITNESS: The expense of laying them I don't know. He will testify as to that. From practice I don't know it. I can manufacture the blocks for the same price he can buy them, about 10 to 12 cents a square foot.

Q. These different methods that you have spoken of were all open and available to you now, are they not?

A. They are available to me to-day, now.

Q. And they have been during the time that we have had under discussion in this case?

A. They have always been. To a small extent I have used all but one.

Q. You have used them more or less?

A. Yes, sir.

(By Mr. YOUNG:)

Q. There is not much demand for them?

A. Well, there is as much demand as for anything else. The people pay for a walk, not for the method of doing it. If you can lay a walk and be responsible for it, they will pay your for doing that work.

(By Mr. KNIGHT:)

Q. That method is practiced, to your knowledge, is it not, in some parts of the country?

A. Yes. In England they do that nearly altogether. They make the blocks into large blocks and lay them just as we do natural stone.

(By Mr. YOUNG:)

Q. It is an English custom, rather than an American?

A. It pays there and I think it will pay here; in fact, we are getting ready to do it here.

(By Mr. YOUNG:)

Q. Since this decision you are getting ready to do it, are you?

A. No; we will not do it before this patent has run out; so, when we do it, we will do it not because any patent obliges us to.

(By Mr. KNIGHT:)

237 Q. Now, Mr. Bruner, you made a statement in your direct examination in this matter before the master that you would give considerable to use the Ross patent. I ask you what you mean by that?

A. I mean I would give considerable to make a block that is smaller at the bottom, a beveled joint. Now, I specified putting wood in or else a weaker concrete. I would prefer it without anything, but you can't make it on the place that way, and if I ever do make blocks in another place and lay them I shall mould them that way and when I lay them will leave it open. It is not the separating medium I want, it is the beveled joint I want, because that has a value that nothing else has.

Q. You can't get this without using——

A. Without using what is declared to be an infringement of the Schillinger method.

Q. Well, does Schillinger say anything about using these beveled blocks?

A. Never had such an idea. In fact, the process he pictures never suggests and he never used it up to this day.

Q. There is nothing said in the Schillinger patent about the blocks being beveled?
A. No, sir.
Q. Made smaller at the bottom than at the top?
A. No, sir.

Mr. YOUNG: I reckon the patent and specifications are the best evidence on that point.

(By Mr. JUDSON:)

Q. You have in your testimony used the term "joint" at different times. Explain what you mean by that term so there may be no confusion about it.
A. By "joint" I mean "a union," and making a joint is by making that union so as to look passable. I don't mean by any means making a disjoint or a separation, I mean making a union.

(By Mr. YOUNG:)

Q. I understand you by the word "joint" you mean "union."
A. Union; where two things come together. If you lay the pavement, the blocks, without making a mark where the blocks end on top, you could only see those marks by looking very closely at them, and the pavement, as a whole, would give you the impression of a stretch of a mortar bed, but if you press a chalk line into it
238 that chalk line will throw a shadow and give you the idea of a stone pavement; it won't make any more joints, but will make a distinction.

Cross-examination by Mr. BLAIR:

Q. What did your raw granite cost you?
A. My what?
Q. Uncrushed granite.
A. Well, as near as I can tell, 18 cents a cubic foot.
Q. Mr. Bruner, I wish to know what you had to pay for raw uncrushed granite.
A. For the raw—you mean the riprap?
Q. Yes, sir.
A. The riprap cost 40 cents a ton loaded on the car, I think.
Q. 40 cents a ton?
A. Yes, sir.
Q. How much is that a car-load?
A. Well, that would be $6 to $8 a car.
Q. $6 to $8 a car-load?
A. Yes.
Q. How many tons in a car-load?
A. 13 to 20.
Q. Then it didn't cost you 18 cents a cubic foot?
A. No; not the riprap at the quarry didn't cost me that. My crushed granite cost me 15 to 18 cents a cubic foot.

(By Mr. YOUNG:)

Q. Mr. Bruner, do you adhere to your testimony in reference to this pavement which you gave on the hearing of the merits?

A. Yes, sir; certainly. I don't see anything that is not in harmony with what I am giving now.

Q. And you say by the word "joint" you mean union?

A. I mean where they come together. I don't mean a union like a gas pipe screwed fast to another one; I mean simply the place where they unite.

(By Mr. KNIGHT:)

Q. That is the meaning in which you used it in the testimony before the master?

A. Yes, sir; a joint in a floor is where two boards come together.

239 SAMUEL C. MCKELBEY, being duly sworn and examined, testified as follows:

(By Mr. KNIGHT:)

Q. What is your age, Mr. McKelbey?

A. 38.

Q. What business are you engaged in?

A. I am engaged in the flagstone business; laying flagstone sidewalks.

Q. How long have you been engaged in that business?

A. Well, about four years.

Q. Are you familiar with making concrete pavements?

A. No; not very.

Q. What do you use—natural stone?

A. Natural stone; flags.

Q. I wish to ask you as an expert in your line of business whether—I will ask you first whether you have seen paving blocks made of concrete.

A. Oh, yes, we had—I laid some that Mr. Bruner made, P. M. Bruner & Co.; just a few of them. I wanted Mr. Bruner to adopt that course to a considerable extent—manufacturing the stone in the blocks similar to those that we have sawed or planed, and lay a sidewalk that way.

Q. That is, making the stone in blocks at your place of business?

A. Make them any time and have them on hand; but he, being the manager of the business, he didn't seem to agree to it, from the fact that he said that it was a new line of business in laying sidewalks—which he is perfectly right about—and it would take us a year or such matter to get men trained to lay them expeditiously and cheaply, and I being very busy at my own business, the flagstone business, and having no inclination to dictate to him as to what he should do, we gave the matter up, but as a matter of fact it is my opinion that they could be laid cheaper than by laying it the way he now does or ever has laid them.

(By Mr. KNIGHT:)

Q. Then you think they can be laid cheaper in solid blocks?

240 A. Manufacturing the blocks at the crusher or at your yard, at your factory, and hauling them out as we do flagstones and laying them as we do natural stone; there is one thing about it: we would have no joints to cut, as these can be moulded; they are moulded with a smooth edge so one will fit against another. We now have to cut them with our natural stone and it would leave very little cutting to do in this because it would be only where you wanted to cut a stone off where it was too long, or to fit it around a corner or where it was broken off. Now, I lay flagstone at about an average of 4½ to 5 cents a square foot it costs me. The job that I am doing now in Chamberlain park costs me less than that. If I should have a job down-town here it would cost me more than that, a little. Now, as to the cost of making these blocks at the factory, I don't know anything about that, but I do know as to the cost of hauling them from there and laying them on the ground, that it can be done for—liberally allowing—at 5 cents per square foot; that is liberal.

Cross-examination by Mr. YOUNG:

Q. How thick is this stone that you lay?

A. Well, for a residence walk it is about—the average is 2½ inches; for a business walk it is three inches; that is about the average, the way they run; that is the natural stone.

Q. What is the weight per foot of 2½-inch-thick stone?

A. I could not tell you exactly; our stone weighs about—Berea stone will weigh about 150 pounds to the cubic foot; a North River bluestone, being more dense and hard, will weigh over 160, I think; I never figured it out.

Q. You have seen none of this concrete made in blocks and removed and put down, have you, in practice?

A. Well, only just experimentally; I have had some

241 moulds made for Mr. Bruner; in fact, he has got them yet; I had some made and took them to his place and had a few blocks made and hauled them out, as I stated in my evidence before.

Q. You never filled a single contract, have you?

A. No, sir.

Q. You are just an amateur?

A. Not an amateur in laying flagstone.

Q. About the other I am asking.

A. Of course.

Q. Not an expert but simply an amateur?

A. I would not be an amateur if the blocks were manufactured according to my directions, then give the blocks to me and let me lay them; not an amateur in laying them.

Q. You never made a contract for any business like this, of removing them after they were made in blocks and laying them down and trying to conform to the irregularities of the streets?

A. I don't understand.

Q. Have you had any practical experience in having them moulded away from the place of laying and removing the blocks there and laying them down?

A. I have not had any experience in moulding them, but a concrete stone, so far as laying is concerned, is the same as a natural stone, or, so far as hauling it is concerned, the same as natural stone, and I have had considerable experience in that.

Q. In mere transportation?

A. In transportation and laying them too. In fact, for awhile I acted as my own foreman.

Q. You have never laid tiling, have you?

A. No, sir; large stone 5, 6, 7, and 10 feet long and 4, 5, and 6 feet wide.

Q. What would be the price of this sawed stone if instead of being 2½ it is 4 or 5 inches thick? How much would it be in the market?

A. It is hard to tell.

Q. Take five inches thick, what would it be worth?

A. It would be worth 20 —. There is quite a difference in
242 stone. Take the Berea stone, for instance; if it was 5 inches thick it would cost 22 to 25 cents for the stone. Take the limestone that I am using; that would be probably 30 to 33 cents. North River bluestone would be 40.

Q. To make it as thick as this concrete it would cost 40 cents?

A. The North River bluestone—yes, sir.

(By Mr. BLAIR:)

Q. You have, then, had no experience in transporting concrete blocks?

A. Some. I have hauled them, as I told you I had a few made. I put the concrete on the bottom—that is the hardest test to make—and then put a load of natural stone on top of the concrete stone and transported them. I have done that to see if they would break in handling.

Q. What interest have you in this suit?

A. I have a fourth interest in P. M. Bruner & Co.'s business. I wish further to explain that in my testimony I didn't undertake to say that one kind of sidewalk was cheaper than another. I simply said that I could haul stones made of concrete and lay them into a sidewalk at about an average of 5 cents a foot—per square foot. If it was out West, where we are laying long strips of it, it would be less than that; down-town here a little more.

Q. You have reference to the transportation and laying down?

A. No, sir. I have reference to laying it, same as I would natural stone. The hauling from our derrick—we would haul, say, from P. M. Bruner's yard instead of our derrick—digging out the foundation, laying the stone in shape, and completing a sidewalk in full.

Q. At the same rate per ton, do you mean?

A. No; an amount per square foot. Now, the difference in hauling, say, this concrete stone, where it was 4 inches thick—the differ-

ence between hauling that and 2½-inch stone would be a quarter or an eighth of a cent more. The thicker the stone of course
243 the less you can haul at once. That would be a little more than hauling the stone. I just wanted to be put right.

Redirect examination by Mr. JUDSON:

Q. You mean to say that if the stone—this concrete stone—was manufactured in blocks of suitable size at your factory, you could undertake to transport it and lay it in a sidewalk where it was desired for the sum named?

A. Yes, sir.

Q. Five cents per foot?

A. That is the average. Some places it is less and some places a little more—just as it would cost me a little more down-town here than on Lindell Ave.

Q. Is there any difference in a block made of concrete or a block made of natural stone, so far as the expense of transporting it and laying it in the pavement is concerned?

A. It is no less to transport it—the same in transportation if it is the same thickness; but it is less expense to lay it with concrete than it would be with natural stone, because I would not have to employ stone-cutters. When it is moulded it is moulded smooth, so that one will lay right up against the other—would not have to have a stone-cutter there. Now, the natural stone, there are rough edges which we have to make smooth. It would be less in cost, of course, than the natural stone in labor.

(By Mr. YOUNG:)

Q. You know nothing about the cost in any other respect, except what you have spoken of?

A. No, sir; not as to the manufacture or anything of that kind.

At this point an adjournment was had until June 21st, 1887, at 10.30 a. m.

JUNE 21ST, 1887.

Parties met pursuant to adjournment. No further testimony was taken and the cause was submitted.

244 And afterwards, to wit, on the fourteenth day of July, A. D. 1887, there was filed in said cause exceptions to the master's report in words and figures following, to wit:

(*Exceptions to Master's Report.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
P. M. BRUNER, Defendant.

Exceptions taken by the said William Shannon to the report of C. H. Krum, Esq., one of the masters of the court, to whom the cause stands referred in pursuance of the decree made on the hearing of the said cause, said report having been filed in said cause on the 27th day of June, 1887.

First exception. For that the master hath in and by his said report certified that, having ascertained that the defendant had made and derived a total profit of $8,467 from the construction of concrete pavement in which the patented improvement of complainant was used, he, the master, was unable from the testimony submitted to him to determine to what extent said improvement contributed to the production of said profit, and hath recommended that a decree for nominal profits only be rendered in favor of the complain-t; whereas the fact was, as complainant is able to show, that complainant offered testimony tending to determine to what extent said patented improvement contributed to the production of said profit; which testimony was, at the instance of defendant, excluded by the master.

Wherefore the said William Shannon excepts to said master's report, and humbly appeals therefrom to this honorable court, and prays that the court may make an order again referring the matter of the accounting in this cause to said master, and directing
245 him to ascertain what part of the sum of $8,467, reported by him as profits made by the defendant in the construction of a concrete pavement in which said patented improvement was used, was due to the use of said improvement.

YOUNG & YOUNG &
ALBERT BLAIR,
For Complainant.

And afterwards, to wit, on the first day of October, A. D. 1887, there was filed in said cause amended exceptions to the master's report in words and figures following, to wit:

(*Amended Exceptions to the Master's Report.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
P. M. BRUNER, Defendant.

Exceptions taken by the said William Shannon to the report of C. H. Krum, Esq., one of the masters of the court, to whom the cause stands referred in pursuance of the decree made on the hearing of the said cause, said report having been filed in said cause on the 27th day of June, 1887.

First exception. For that the master hath in and by his said report certified that, having ascertained that the defendant had made and derived a total profit of $8,467 from the construction of concrete pavement in which the patented improvement of complainant was used, he, the master, was unable from the testimony submitted to him to determine to what extent said improvement contributed to the production of said profit, and hath recommended that
246 a decree for nominal profits only be rendered in favor of complainant; whereas the fact was, as complainant is able to show, that complainant offered testimony tending to determine to what extent said patented improvement contributed to the production of said profit, which testimony was, at the instance of defendant, excluded by the master. Reference is hereby made to the testimony taken before the master as follows, to wit, pages 59 and 60, where certain testimony from the witness George A. Hynes was excluded, and pages 61 and 62, where certain testimony of the witness William Shannon was excluded.

Wherefore the said William Shannon excepts to said master's report, and humbly appeals therefrom to this honorable court, and prays that the court may make an order again referring the matter of the account in this cause to said master, and directing him to ascertain what part of the sum of $8,467 reported by him as profits made by the defendant in the construction of concrete pavement in which said patented improvement was used was due to the use of said improvement.

YOUNG AND YOUNG,
ALBERT BLAIR,
Solicitors for Complainant.

And afterwards, to wit, on the third day of October, A. D. 1887, the following further proceedings were had and appear of record in said cause, to wit:

(*Order Sustaining Exceptions to Master's Report.*)

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

Now come the parties, by their respective solicitors, and the exceptions to the master's report herein *is* sustained and the report set aside, and it is ordered that this cause be remanded to the master for further proceedings.

247 And afterwards, to wit, on the seventeenth day of December, A. D. 1887, there was filed a supplemental report of the master in words and figures following, to wit:

(*Master's Supplemental Report.*)

In the Circuit Court of the United States, Eastern Division, Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Respondent. } No. —.

Report of master.

To the honorable the judge of said court:

When this case was heard by me originally the complainant apparently proceeded upon the theory that the entire profit realized by the respondent from laying a pavement under the Schillenger process should be assessed against him as damages. I then was of the opinion that such a rule of damages was improper. I am still of the same opinion. Certain questions were asked, to which I sustained objections. My ruling in that regard was not approved by the court. The case was sent back to me for further proceedings. In sending back the case the court said I ought not to have returned the report without some element of profits or damages.

Accordingly the case has been further heard. I have admitted all of the evidence offered. I have allowed the complainant the utmost latitude. He has, however, renewed none of the questions which were excluded upon the former hearings. He has proceeded, at the later hearings, on the theory that a pavement laid on the plan of Schillinger will not crack, but that one laid upon another plan will crack, and that as a cracked pavement
248 is — worthless than a perfect one the difference in value per foot, as applied to all of the pavement laid by the respondent down to the time of the injunction—some seventy-five thousand feet—is the true criterion of damage.

I do not understand the court to require me to find in any event that the respondent has realized a profit from the use of the patent owned by the complainant. I have, however, carefully reviewed

the evidence to see, if possible, where the respondent has realized profits attributable to his use of the patent, but I have been unable to arrive at a conclusion which will afford the complainant substantial damages.

To insert tar paper between blocks of concrete in the course of their manufacture is merely to create a joint. The joint can be made, according to the evidence before me, by omitting the tar paper. How the pavement is to be constructed does not seem to enter into the consideration of owners who contract for the pavement. They contract for a concrete pavement. The contractor guarantees to lay one which will not crack. Prior to the injunction the respondent had open to him and he might have used any of the methods other than the Schillinger method which the evidence shows were open to use. He might have laid the pavement in alternate blocks. He might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion. In either way he would have produced a pavement with joints, which, as far as I can see from the evidence, would have been as good as that produced under the patent; at least as far as concerns the element of joints. I do not understand that the insertion of tar paper or other substance in the joints of the pavement alone gives such pavement its value or usefulness. No one, in the light of the evidence before me, can reach such a result. It is not such an ad-
249 vantage over other methods open to the respondent as ought to give to the complainant the right to recover the profits of laying the entire pavement. Therefore the measure of recovery must be limited to the benefits which the respondents enjoyed from the use of the patented improvement. No license fee has been shown by which a rule of recovery might have been secured. No contract with special reference to the use of the improvement has been shown to have been made by the respondent with any customer. The use of the pavement is not shown to have been limited to any particular locality. Its use was and is general and in confined to no exceptional district. With the improvement the pavement costs neither more nor less than it does without such improvement; at least the difference is not appreciable.

In the light of these features of the case, I cannot reach the conclusion that ground has been afforded me for recommending an award of substantial damages. Hence I recommend that the complainant be adjudged nominal damages, and no more.

All of the evidence which the parties, under the widest possible latitude afforded them, have seen fit to introduce is now before the court, and if my conclusion is erroneous it can easily be corrected.

Respectfully submitted.

CHESTER H. KRUM, *Master.*

And upon said seventeen- day of December, A. D. 1887, there was also filed in said cause a record of proceedings before the master in words and figures following, to wit:

(*Record of Proceedings Before Master.*)

WILLIAM SHANNON
vs.
PRESTON M. BRUNER. } No. 2650.

250 OCTOBER 28, 1887.

This case having been referred back to the master for further hearing by order of the court, parties met pursuant to agreement at the office of George H. Knight, October 28, 1887, at 2 o'clock p. m., and the taking of testimony on the part of the complainant was begun as follows:

Present: Messrs. Blair & Young, for complainant, and Messrs. Knight and Judson, for the respondent.

(It is hereby stipulated between counsel that all adverse rulings by the master may be considered as excepted to by the party whose interests are supposed to be prejudiced by the rulings.)

P. M. BRUNER, being recalled, testified as follows:

(By Mr. BLAIR:)

1 Q. In your testimony in the former hearing of the case you presented an exhibit, marked D, in which was represented a pavement made under the Schillinger patent, and with reference to which you used the following language: "In these two figures the double line represents the curbstone and the spiral line in the center of each figure represents the shape of the blocks as made. They show the joints of the blocks. The little red lines show how the cracks run across the blocks, which according to my interpretation is caused by their yielding across their own substance instead of yielding along the joints, along which they ought to give; and I also add that all those blocks that are here separated, if they were individually laid out in an open field, they would not break for a century from the frost."

The WITNESS: I want to correct that—that is, instead of "spiral lines" they should be "diagonal lines;" that is what I said. It is wrong in the book. It would not make sense the way it is there.

251 2 Q. I ask you what is such a pavement worth in the city of St. Louis?

A. The prices of such a pavement—it is worth from 25 to 30 cents.

3 Q. What is its value in its cracked condition, as shown?

A. That would be hard to say. It would depend on the taste of the man that had it or the place it was situated in. It would last just as long if it is well made after it is cracked than as if it hadn't cracked. The best way to find that would be, I think, to find some man who has a stone pavement one or more of whose stones are broke—what he thinks of it.

4 Q. In your judgment, what would people generally be willing to pay for such a pavement with the crack there?

Objected to as irrelevant. Objection overruled.

A. I can't tell.

5 Q. Would they pay as much as 20 cents?

A. I can't tell.

6 Q. Would they pay as much as 25?

A. I can't tell.

7 Q. Would they pay as much as 15?

A. I can't tell.

8 Q. What is your best impression?

A. I don't know what people may do.

9 Q. In your opinion, would people suffer you to put down a pavement that would crack in that manner for nothing?

A. Yes, sir; any amount of them.

10 Q. Would they be willing to pay as much as 10 cents?

Objected to. Objection overruled.

A. I can't tell.

11 Q. What, in your judgment, caused the pavement represented by you in Exhibit D to become cracked in the manner as shown in the drawing?

A. It is specified in the article quoted; it is specified in the paragraph quoted.

12 Q. There is no explanation here of what causes the crack.

A. Well, that is not necessary.

13 Q. I wish to know, in your judgment, the cause of the
252 cracking in this case.

A. That is specified in the paragraph.

14 Q. I should like to have you answer the question.

A. (Witness examines the paragraph referred to and says:) It is not in the paragraph, but it is the heaving that has done it.

15 Q. Don't you there state that if they were laid in an open field they would not break for a century?

A. Yes, sir.

16 Q. How is it, then, that the frost causes them to break irregularly?

A. Because one is broke by the other, by adhering to the other in the same way.

17 Q. Are you not obliged to guarantee against cracking in the contracts you make?

A. Yes, sir; I do that. But in answering that previous question by adhering I wish to say it is interlocking—I mean more than adhering—or rather than adhering.

18 Q. Explain further, if you desire.

A. I say I mean interlocking; that the joints interlock. I don't mean that one sticks to the other, adheres in the way that paste would adhere to anything, but they fit together.

Cross-examination by Mr. JUDSON:

19 X Q. You stated that a certain kind of pavement would bring, as I understand, 35 cents. Of what kind? 35 cents what?

A. 25 to 30 cents per square foot.

20 X Q. When you say 25 to 30 cents, is that irrespective of the ingredients which make up the pavement?

A. Not altogether.

21 X Q. Or do you refer to what you have called the granitoid pavement?

A. The price has been very near the same for all kinds.

22 X Q. From 25 to 30 cents per square foot?

A. Well, sometimes even a little lower and sometimes a little higher.

23 X Q. Are some species of pavement more expensive than others, or do they vary by the difference in the materials
253 that make up the pavement?

A. Altogether; they can be made as low as 10 cents a foot and as high as a dollar; it depends on the amount and quality of the material that is used.

24 X Q. That is to say, there is no fixed price for making what is called an artificial pavement, is there?

A. No, sir.

25 X Q. It may be made of very cheap material and of comparatively expensive material, may it not?

A. Yes, sir.

26 X Q. When you spoke of 25 to 30 cents did you refer to a pavement made of any particular material?

A. No; I referred to the mixture such as I generally employ.

27 X Q. And that is of the character which you have described in your previous examinations?

A. Yes, sir.

28 X Q. To your knowledge are any other mixtures employed in making an artificial pavement?

A. Yes, sir; there are mixtures.

29 X Q. Less or more expensive?

A. Generally less expensive.

30 X Q. When you answered in that general way of 25 to 30 cents per square foot you referred to a pavement made of the kind of material that you have been using in your pavement, did you not?

A. Yes, sir.

31 X Q. And that is wholly irrespective of the method of separating the pavement into blocks?

A. Yes; and I am never asked how I make my blocks, so that they answer the purpose. I guarantee my pavements and make them as I like.

32 X Q. In your experience of laying artificial pavements in the city of St. Louis has it ever been stipulated or required that you should lay them in blocks by any particular method?

A. No, sir; I guarantee them, not simply not to crack, but I guarantee them not to scale or settle or wear rather, or disintegrate from the weather; the cracking guarantee is not the only guarantee.

33 X Q. You simply guarantee that you will make a com-
254 plete pavement?

A. I guarantee that I will make a complete pavement such as people would like to have in place of stone, and when I guarantee I don't except that never any one will break; I simply guarantee or agree to replace them if they so desire.

34 X Q. You have stated that the cost of laying pavements, or, rather, as I understood your answer to the question, that such a pavement would bring from 25 to 30 cents a square foot in the city of St. Louis?

A. Yes, sir.

35 X Q. Now, you have at different times separated these pavements into blocks in the different methods which have been mentioned in the testimony heretofore given, have you not?

A. Yes, sir.

36 X Q. Now, state whether or not there has been any difference whatever in prices of such pavements in the city of St. Louis according as you separated it into blocks by one or another method of the several four different methods which have been described in the testimony given in this case—that is, whether between one or the other method there has been any difference in the prices in St. Louis.

A. There never has been any; never made any arrangement about how I shall divide my pavements or what *em*thod I shall use.

37 X Q. Have you ever heard any preference expressed by your customers for one method over another method?

A. I have not; they generally think that I know what I am about and let me have my own ways as long as I guarantee to make a satisfactory product.

Redirect examination by Mr. BLAIR:

38 Q. Don'- you contract with your customers to put down what is known as the granitoid pavement?

A. Yes, sir.

255 39 Q. That means a joint-block pavement, don't it?

A. No; it means something like granite.

40 Q. Don't you know the method of putting down a granite pavement has been with thick blocks?

A. It is a pavement that is made in thin blocks, and I have only laid one in all my lifetime.

W. A. BORMAN, sworn and examined, testified as follows:

(By Mr. BLAIR:)

1 Q. Where do you reside?

A. 3617 Easton avenue.

2 Q. What is your business?

A. I am an architect and superintendent.

3 Q. State generally what experience and observation you have had in concrete pavement.

A. In concrete pavements I have supervised a good deal of sidewalks that have been laid in the city, and seen different ones laid down by Mr. Shannon, and other ones laid by other parties, but

have always given Mr. Shannon the preference as far as his pavement is concerned, in that he lays them down in blocks that don't crack. I have seen a good many other ones not laid by Shannon that were.

4 Q. How long have you been an architect?

A. Since 1870.

5 Q. Is your experience confined to St. Louis?

A. Oh, no, sir; in the old country. We made a good many in Germany.

6 Q. How long have you been in St. Louis?

A. Six years.

7 Q. Do you know the value of pavements in the city of St. Louis known as the Schillinger pavement and the granitoid pavement?

A. Yes, sir; I do.

8 Q. I will ask you this question, and take time to hear it and consider it: What is the value of a concrete pavement constructed as follows: having a foundation structure of cinders
256 eight or nine inches thick, and composed of crushed granite and Portland cement, being thoroughly mixed while wet and laid in a plastic state in a layer four to five inches thick and laid without division in the blocking, forming a continuous layer or sheet the width of the sidewalk for the entire front of a lot, say 25 or 50 feet?

A. Well, no*t*, that depends. I would not have such a pavement continuously. Is it a question of what the material is worth or a question of special taste or a scientific question?

9 Q. The question is, What is the value of a continuous pavement constructed in that manner of concrete?

A. Well, I never laid a continuous one; but if I had to pay for a continuous sidewalk I would not give more than 10 cents for the real value of the labor and material.

10 Q. Why not?

A. Because that pavement would not stand.

11 Q. Why not?

A. I never seen a continuous sidewalk that didn't crack. Even floors laid that way——

12 Q. What floors?

A. There are these floors in factories, malt-houses, and so on.

13 Q. You refer to concrete floors?

A. Yes, sir; I refer to concrete floors laid in one sheet.

14 Q. Then your statement is that a continuous concrete pavement constructed as I have stated is not worth more than 12 to 15 cents?

A. No, sir.

15 Q. You mean a foot—12 to 15 cents a foot?

A. Yes, sir; square foot.

16 Q. In your judgment, how many of a hundred such pavements will remain for a year without cracking?

A. I believe not one.

17 Q. Now, please listen carefully to this question: What is the

value of such a pavement, not continuous, but laid in blocks, say, four feet by six feet or six feet by ten feet, each block formed
257 within a frame, but the frame removed immediately after the form is set, constructed without any foreign substance interposed between the adjacent blocks, but each block when laid crowding into or interlocking with the last adjacent block to the degree produced by the pressure of ramming required to solidify the mass, all the blocks being laid while in a plastic state and in immediate succession?

A. Well, the question is hard; if the last part where the new block or sheet comes against it, if it is rough or smooth there is a difference; when we say that, to form absolutely one body of the block, there is a difference in that. If the surface is not smooth it can interlock, but if it was smooth you can take them out afterwards. There is always interlocking if you make them against a smooth part or a rough part.

18 Q. Well, interlocking as usually made?

A. As usually made I would consider that as worth from 22 to 27 cents a foot.

19 Q. What is such a pavement laid in blocks worth where it results in becoming cracked in an irregular manner?

A. Such a pavement?

20 Q. Yes; when it has become cracked or constructed so that it will become cracked.

A. Well, I would not consider it worth more than the first one—that is, if it is cracked like the first one.

21 Q. I ask you what a pavement made of the materials and of the thickness stated divided into blocks and cracked in an irregular manner is worth.

A. I would consider it not worth more than the labor and material—not even that.

22 Q. What do you consider it worth?

A. From 12 to 15 cents a square foot.

23 Q. What is a pavement laid in the manner stated and of the materials in the proportion stated and liable to crack irregu-
258 larly worth at the time it is laid, in the city of St. Louis, at the present time?

A. Liable to crack?

24 Q. Yes.

A. Well, in that condition, I would not give more than ten cents a square foot for it, having to take the risk for it.

25 Q. What is your estimate of its value?

A. Say 15 cents a foot.

26 Q. What was the value, say, during the last three or four years?

A. Oh, well, that may occur in a sidewalk very often in four years. It may happen, even, in a good one.

(By Mr. KNIGHT:)

27 Q. Such as laid by Shannon?

A. No; that is different. I am talking about what they said before.

Cross-examination by Mr. JUDSON:

28 X Q. What did you say your business was?
A. Architect and superintendent.
29 X Q. You have done work with Mr. Shannon?
A. Yes, sir; I did.
30 X Q. Have you done much work with him?
A. Mr. Shannon got one sidewalk.
31 X Q. When was that?
A. That was laid two years ago upon Ewing and Lucas avenues.
32 X Q. How lately have you seen that sidewalk that you laid with Mr. Shannon?
A. That may be about four weeks ago.
33 X Q. What sort of condition is it in now?
A. It was good.
34 X Q. Did it ever crack any?
A. I have not seen any.
35 X Q. You don't know whether it has cracked or not?
A. No, sir.
36 X Q. Good pavements are liable to crack after the lapse of some years, are they not?
A. Well, that is according to how they are laid, as stated before.
37 X Q. But pavements laid in blocks will crack sometimes, will they not?
A. Not easy.
259 38 X Q. Was this pavement of Shannon's at the place you spoke of laid in blocks?
A. That was laid in blocks, sir.
That MASTER: On the Maggie Dyer (MacAdams) property?
The WITNESS: Yes, sir.
39 X Q. You have given certain estimates of the value of pavements. Did you ever know of a pavement laid in continuous sheets on sidewalks—an artificial pavement?
A. No, sir.
40 X Q. When you say what such a pavement is worth you mean what you yourself would give for it; is that it?
A. No; I gave the value at what I considered it worth for a sidewalk. It may be worth what I gave for it, just what it is worth for a malt-house or other building, but not for a sidewalk replaced.
41 X Q. Do you mean to say you ever knew of any such pavement to be laid or paid for? Do you know of any market price for it?
A. I do not believe they can lay one in a continuous sheet.
42 X Q. You don't believe it can be done?
A. That is what I think.
43 X Q. When you say what you think it is worth, that is what you consider the labor and material worth?
A. Yes, sir.

44 X Q. But as far as fixing the market price for a pavement of that kind, you don't pretend to do that, do you?

A. No; I think that is worth nothing then.

45 X Q. There is no market price for such a pavement?

A. I don't believe there is, unless it can be taken for a malt-house floor or yard.

46 X Q. When you refer to 12 to 15 cents you refer to what you think is the cost of the labor and material for that kind of a pavement?

A. No; I would not even have a sidewalk for that.

47 X Q. Well, how do you happen to fix that price upon it?

A. I say the labor and material. What they use in it may be worth what I gave, but I would not give more than that.

260 48 X Q. Your estimate is on the idea of the cost of labor and material for that?

A. Yes, sir.

49 X Q. And what other people would be willing to give for such a thing you don't know?

A. No; a man with a little sense will not have a sidewalk that he knows will crack, and if a man finds the sidewalk will crack he will have a good one. That is what I think.

50 X Q. In regard to a pavement laid in blocks, it is liable to crack?

A. That is not easy to crack if the blocks are not too big. Maybe a block of 20 by 20 that will.

51 X Q. So the prevention of cracking, in your judgment, lies in laying the pavement in blocks?

A. That is what I think.

52 X Q. It don't depend on how you make the blocks at the time?

A. Oh, certainly.

53 X Q. How?

A. Oh, you can make a block two inches thick; but we are talking about the blocks mentioned before.

54 X Q. What is the usual thickness of blocks?

A. They range from 6, 7, to 8 inches.

55 X Q. Take blocks of that thickness. The prevention of cracking lies in making it into blocks?

A. It lies in making it into blocks with joints between.

56 X Q. But it don't depend on how you make the blocks provided they are of the usual thickness?

A. No; you make them square or straight; it con't make any difference.

57 X Q. Suppose you make blocks and lay them on the ground, one alongside the other, how would that be?

A. That is a question how the blocks are made.

58 X Q. Suppose the blocks are made in the factory?

A. If they are made all right I guess they will stand.

59 X Q. They would not crack then?

A. I think not.

60 X Q. Would not blocks made in a factory and brought
261 and laid on the ground, which do not crack and are not liable

to crack and which are of the same thickness—would they not be worth as much as other pavements would?

A. If they are not liable to crack I think it would be the same thing.

61 X Q. Would it be more liable to crack?

A. It is according to how they are made.

62 X Q. I suppose them the same thickness and material.

A. If they are of the same thickness and material I don't see that there is any difference.

63 X Q. Your idea of the difference in value of a pavement is, you don't think a pavement is good for anything if it is cracked?

A. For a pavement; no, sir.

64 X Q. But as long as it don't crack, then one pavement would be as good as any other if it was of sufficient depth and material?

A. If sufficient depth and material, no matter who does it.

65 X Q. You don't know of any difference in the price?

A. As stated before, if I have one that don't crack I pay more for it.

66 X Q. Pavements laid in blocks crack sometimes, don't they?

A. In single blocks?

67 X Q. Yes.

A. Well, you can break them—there is no question about that—by heavy weights on them.

68 X Q. I mean in the course of years even pavements very well laid crack sometimes, don't they?

A. No; not when laid right they don't—that is, if the blocks are not too big in size.

69 X Q. How big?

A. A block 8 by 10, I think, if the bed is made solid and able to stay.

Signature waived.

262 J. K. HARDY, sworn and examined on the part of the plaintiff, testified as follows:

(By Mr. BLAIR:)

1 Q. Where do you reside?

A. 2601 Eliot avenue.

2 Q. What is your business?

A. I am in the fruit business now.

3 Q. How long have you been in that business?

A. I have been in that business very near two years now.

4 Q. Have you had any experience or observation in concrete pavements?

A. Slightly; yes, sir.

5 Q. Please state in a general way to what extent and where.

A. I guess I have laid about a million and a half in St. Louis, square feet. I have been in the business about 12 years. I finished the United States custom-house up there, floored in the building and put the roof on.

6 Q. Are you familiar with pavements in St. Louis known as the Schillinger and granitoid pavements?

A. Yes, sir; I used to partly own the Schilllinger patent.

7 Q. What is the value of a concrete pavement constructed as follows: Having a foundation structure of cinders eight or nine inches thick, and composed of crushed granite and Portland cement, being thoroughly mixed while wet, and laid in a plastic state in a layer four to five inches thick and laid without division into blocks, forming a continuous layer or sheet the width of the sidewalk for the entire front of a lot, say 25 or 50 feet, for a continuous concrete pavement?

A. I guess I would have to figure on that same as I would figure on a malt-house floor. That is a continuous job; no cuts in a malt-house floor. A sidewalk laid continuous can't be done without cracking.

8 Q. What is your estimate of the value?

263 A. It would be an impossibility; you could not do it after you got past a certain limit, say, for instance, five feet by the length of the sidewalk.

9 Q. What causes the crack?

A. Well, that is something I don't know; improper laying; too much cement; too much stone; but I don't think you could go past five feet without a crack; five feet you can lay it—that is, if you lay it thick enough and put your concrete bed underneath.

10 Q. What is your estimate of the value of such a pavement?

A. About the same valuation as we would lay a malt-house floor for, from 10 to 12 cents per square foot, and I don't think if you stated to a party that you were going to lay a continuous sidewalk that they would have it under any circumstances.

11 Q. I will ask you this question: What is the value of such a pavement, not continuous, but laid in blocks, say four feet by six feet or six feet by ten feet, each block formed within a frame, but the frame removed immediately after the form is set, constructed without any foreign substance interposed between the adjacent blocks, but each block when laid crowding into or interlocking with the last adjacent block to the degree produced by the pressure of ramming required to solidify the mass, all the blocks being laid while in a plastic state and in immediate succession?

A. If you lay one block and immediately take up that strip and put down another block it will never adhere. There will be a crack, I say, that naturally makes a joint. The moment you make a layer of fresh cement there is bound to be a crack, and that crack is going to follow where that wooden partition is taken out or any other obstruction.

12 Q. Is there any degree of pressure of ramming required to solidify the mass?

A. No, sir; you can't do it. I would like to see the man do it and make a success. When the set gets in the cement you can't make fresh cement set to it.

264 13 Q. When you lay the second block will not the ram-

ming that is required cause it to interlock with the preceding block?

A. To a certain extent it will interlock, but when the expansion takes place the crack is there.

14 Q. What causes the interlocking?

A. The ramming.

15 Q. What are pavements cracked in an irregular manner worth?

Objected to.

A. I can't answer that.

16 Q. You say that in consequence of the ramming of the block last laid it becomes interlocked, to a certain extent, with the last preceding block?

A. Well, your idea about interlocking may be different. What do you call interlocking—one tile holding the other down? That is what I call "interlocking."

17 Q. You state what occurs.

A. I say to a certain extent by interlocking it will stay down, but still the crack will be there. I own a patent I will explain—the Nicholls, of Chicago. It simply has the half of an egg, for instance, in that mould. It goes down and when pulled out it leaves a- offset, and the cement that follows naturally goes in that offset and pulls one tile or a half a dozen of them down. That is what I call an interlocking joint, but still the crack is there when it dries out, and you have to have that there to hold it, or let the impress be a foot and it will do the same thing.

(By Mr. YOUNG:)

18 Q. What is a continuous pavement, seven or eight inches thick, laid, as has been stated, to the width of the pavement, worth; what is the value of it, say 30 feet by 10 or 12—the width of the pavement—what do you consider the value of that pavement in St. Louis?

A. I have never seen one laid.

19 Q. There are none, are there?

A. Not that I know of. I have never seen one.

265 Cross-examination by Mr. JUDSON:

20 X Q. You were asked about the pavement laid with a foundation. What is the usual foundation of a sidewalk pavement—that is, how thick?

A. From eight to ten inches of cinders or with a non-conductor against frost.

21 X Q. What is the usual foundation for a malt-house pavement or cellar floors?

A. It varies. At Wainwright's I laid it as high as ten inches.

22 X Q. What is the usual foundation for a malt-house foundation pavement?

A. There is no scale you can go by. You might get into one

building and it will run two inches and a half or an inch and a half, and it will run in another job three inches and a half or four inches; it is hard to tell. Foundations will vary according to the depth and the material in it.

23 X Q. When you put an estimate of 10 to 12 cents as the price for a malt-house pavement, what kind of a foundation did you figure on?

A. On concrete made out of cinders.

24 X Q. How deep?

A. A dollar and ten cents a square yard.

25 X Q. But how deep a foundation?

A. I run that about three inches.

26 X Q. If you were laying such a pavement as at Wainwright's what would that be?

A. That is three inches and a half deep, to the best of my knowledge; it run about three inches and a half.

27 X Q. And on a sidewalk it would be about how much?

A. On the sidewalk—that varies; on the south side of the street he made it a good deal thicker than the north, because there was more sun on the north than on the south side. We generally run a couple of inches deeper on the south side merely to govern against frost.

28 X Q. How thick do you lay a concrete pavement on top of this cinder foundation? How thick would you lay a concrete sidewalk?

A. That varies from an inch and a half to two inches and
266 a half deep or from three-quarters to an inch and a half.

29 X Q. How would it be in cellar pavement?

A. You mean a malt-house?

30 X Q. Yes, sir.

A. We give just as good a job in a malt-house as on a sidewalk. It gets as much wear and tear as a sidewalk.

Signature waived.

JOHN LAMB, sworn and examined on behalf of the plaintiff, testified as follows:

(By Mr. BLAIR:)

1 Q. Where do you reside?

A. 919 Olive street.

2 Q. How long have you lived in St. Louis?

A. About 12 years.

3 Q. What experiences and observation have you had in concrete pavements in St. Louis?

A. Not any experience at all; a little observation.

4 Q. How much?

A. I never laid one. I have been engaged, though, three or four years in laying flagstone sidewalks, and, of course, I have necessarily observed them a little, so that I can say I have had a little observation, but no experience; never laid one.

5 Q. Are you acquainted with concrete pavements in St. Louis known as the Schillinger and granitoid pavements?

A. I know what is known as the granitoid pavement. I have some idea what the Schillinger patent is, as to the making of the joints.

6 Q. Do you know the value of such pavements?

A. I know about the prices they get for them.

7 Q. What are the prices?

A. 25 to 30 cents and 32 cents.

8 Q. I will ask you this question: "What is the value of a
267 pavement constructed as follows: Having a foundation structure of cinders eight or nine inches thick and composed of crushed granite and Portland cement, being thoroughly mixed while wet, and laid in a plastic state in a layer four to five inches thick and laid without division into blocks, forming a continuous layer or sheet the width of the sidewalk for the entire front of a lot, say 25 or 50 feet?"

A. I can't tell you what the value is. I have never seen one laid that way. There has been two or three such that have been laid that way that I have observed that have been broken up; one down in front of the Winter garden that was laid in one continuous sheet—I believe it was claimed to be—but it was broken up so bad from the time I began to observe it that I could not tell whether it was or not.

9 Q. I will ask you this question: What is the value of a pavement constructed as above, but not continuous, laid in blocks, say four by six feet or six and a half by ten feet, formed within a frame and the frame removed immediately after the form is set, constructed without any foreign substance interposed between the adjacent blocks, but each block when laid crowding into or interlocking with the last adjacent block to the degree produced by the pressure of ramming required to solidify the mass, all the blocks being laid while in a plastic state and in immediate succession?

A. My observation of walks where they are laid in joints, as you say, I do not know—I have not known—whether there was anything interposed between them; but in a case where they adhered together—didn't adhere but interlocked—they became ragged along there to some extent—breaking irregular; didn't make smooth line, as in separate blocks. Of course that detracted from the appearance of the pavement to some extent.

—. Then it is simply a question of their value—one with smooth joints or one with ragged joints?

268 A. It is a question of judgment of different persons. One might not care whether it was ragged or not, and another might be willing to pay considerably more to have smooth joints.

10 Q. What is your estimate of the value?

A. Well, it is just owing to the way or where I had to lay them. If I had a nice building and was laying a sidewalk in front of it, of course I would lay it so as to have smooth joints, and I would give a hundred per cent. more to have good joints and a good pavement than to have a ragged one at any cost.

11 Q. If a proper pavement, such as you desired, is worth 30 cents a square foot what would you consider an inferior one that is cracked irregularly along the lines of division in blocks?

A. As I said, I would rather give a hundred per cent. more for one that is perfect than for a ragged one.

12 Q. Taking 30 cents as the value of the best, what would you value the other at?

A. Divide that by two would be 15 cents.

13 Q. Of a hundred pavements laid in blocks, but without any interposing medium between the blocks and with this interlocking that results from the necessary ramming, how many of a hundred such blocks will remain a year without cracking, in your judgment?

Objected to. Objection overruled.

A. I do not know as I would be able to answer that. I will merely say that all the pavements I have observed had opened along the joints, some of them ragged and some of them smooth. They open a little from the weather or from shrinkage, a good many of them. One block will settle past the other, and when you walk over them you will notice one projects above the other a little, showing they have slightly settled, and being interlocked, that would make it ragged along there.

14 Q. What is a pavement laid in the manner stated—that
269 is, divided into blocks where there is no foreign substance interposed but the interlocking resulting from the ramming, with a liability to crack irregularly—worth in the city of St. Louis?

A. Well, that I can't say. It is simply a question of judgment and the taste of men where they are laid, and it is a question somewhat of taste whether a ragged or smooth pavement would be the more valuable.

15 Q. Can you put an estimate on the value?

A. It would seem to me that is just the question I did reply to, that it was a ragged joint or a smooth joint. I would rather have a smooth joint than a ragged one by a hundred per cent.

(By Mr. YOUNG:)

16 Q. Have you been about the city of St. Louis a great deal, on the streets and pavements in the main thoroughfares, in the last three or four years?

A. Yes, sir.

17 Q. Have you noticed any pavements made of concrete in a plastic form continuously, say from 12 to 30 feet?

A. No, sir; I don't think I have seen one laid within the last three or four years more than possibly as much as eight feet in one block. I don't think larger than that.

18 Q. Eight by ten or twelve, something like that?

A. Yes, sir.

19 Q. You have never seen any other here in the city on sidewalks?

A. No, sir; not on sidewalks. I have seen cellar floors in malt-houses.

20 Q. Have you noticed the practical laying of concrete pavements in St. Louis lately?

A. Yes, sir; I could not help noticing that; continuously at it.

21 Q. Have you noticed how wide they are laying it?

A. No, sir.

Cross-examination by Mr. JUDSON:

22 X Q. When you were talking about the edges of the
270 pavement what did you mean by that? I don't quite catch your idea; you spoke of its being rough and smooth?

A. Where there has been a joint made, he asked, if where they are interlocked together—the edges of them—what the joints would be where the one block has been put down, and I conceived that another has to be put to it and tamped in. That necessarily causes them to interlock a little like saw-teeth together, and in any settling of one block or enother, one block being lifted up by frost or anything, it necessarily, when the joint opens between the two or cracks, it leaves the edges of that joint ragged on the line, or rough, while if one is lifted up perfectly independent of another, like a flagstone lifts up past the other, it will lift without rubbing the joint or breaking the sides or edges of the joint.

23 X Q. Then it would be smooth?

A. Yes; if one was independent of the other, like a flagstone, although in flagstones, frequently, in lifting one it will snip the other.

24 X Q. Suppose they made the blocks like flagstones—made them like tiles, in the factory—and brought them along to the ground, and then laid one against the other, and laid them carefully and perfectly smooth, then the same result would be accomplished, would not it?

A. No; they might possibly in the edges get snipped a little, but in interlocking together they break loose when locked a little.

25 X Q. If laid in that way they could be laid so as to have smooth edges?

A. Oh, yes.

26 X Q. Then the same result would be accomplished as far as having a smooth appearance is concerned, would it not?

A. Yes, if they were brought as flagstones are brought.

27 X Q. You were referring to the difference between smooth and rough edges on top?

A. Yes; I mean smooth or rough joints.

28 X Q. Of course, if a man wanted a nice job in front of
271 his house he would want to have it smoothly finished in that respect?

A. Yes, sir.

29 X Q. You were never in the business, I understand?

A. No, sir. I have laid flagstones a good deal, but I have never laid any cement.

30 X Q. You spoke of having observed these pavements a good deal?

A. Necessarily; I have been somewhat of a rival of Mr. Bruner's and tried to get a job where he did for flagstones—where he would get it for cement—and Shannon too.

31 X Q. These artificial pavements when laid in blocks crack too after some time, don't they?

A. Yes; I think so. I have not ever seen it laid in blocks except in 18-inch or 20-inch tiles—20 inches square.

32 X Q. In the blocks you have seen, have you ever seen the blocks crack?

A. Yes; right across the block.

33 X Q. Sometimes right across the middle of the block?

A. Yes; there is a sidewalk at the corner of Cass avenue and Broadway that was laid with joints. I observed that within a few weeks after it was laid and where there had been a joint the crack was sometimes an inch from the joint, and in taking out the scantling when they laid it with the intention of marking the cut along through the joint to the top—in forming that mark—they laid a straight-edge down and cut the mark along and missed the place where the two came together; it is separated where the two came together instead of where they cut it, separated and made it ragged, sometimes notched away, and, I think, that resulted in breaking a considerable number of the blocks across by their being cracked there or broken across the joints.

34 X Q. You cannot make any pavement to come up to the natural thing, I suppose?

A. Oh, no; natural flagstone beats them all.

272 35 X Q. Now, in speaking of prices of these pavements, you have had occasion to observe that in your business, I suppose?

A. Yes, sir.

36 X Q. The prices of pavements being made of certain materials, being what they call concrete pavements?

A. Yes, sir.

37 X Q. That price would not be paid for a pavement made of limestone or some cheap stone, would it?

A. Well, no; I think not; although in my estimate I think neither the granite nor limestone, if crushed in the same way, takes the wear on the top surface, where they put the crushed granite and cement together; a half inch of top surface takes all the wear for a number of years, whether the body of that is made of limestone or crushed granite. I think these men use that as a little humbug; they use crushed granite as a humbug, when really it is no better than limestone or real gravel.

38 X Q. I am referring to the cost. If made of some cheap material they could not charge as much for it or get it, at all events?

A. No. Of course the cost to them would be a little more or less. If they lay it on a cellar floor they can use cinders instead of gravel or crushed granite. Now, the price for an artificial pavement is based on its being laid in blocks, so as to present a seemingly good

appearance and be valuable, and how they make the blocks as long as they make them smooth is immaterial wholly as far as the price is concerned. If I were talking to a citizen about laying a walk for him, I think he would leave it more to my judgment how I would make the joints, or, if Mr. Bruner, he would leave it to his experience how to make the joints. It is simply a question with Mr. Shannon or Mr. Bruner how they will make a durable walk to give satisfaction. They have to keep up their reputation in the business and the citizen just takes their assurance for putting him
273 down a walk that will stay there and don't investigate.

39 X Q. But there is no difference in the market price for these artificial pavements, as to how the blocks are made, as long as they are made, is there?

A. Well, I don't know; it would be with a few; it would make a difference with me as to the price.

40 X Q. I am referring to the market price—as to any difference in the market price of the work.

A. Well, I suppose a citizen who knew nothing about it would not question, but would say, "Go and lay me a walk," and he would not know whether they were going to put joints in or not, but the market value, if there is a market value—he risks the reputation of the contractor who does it, and that makes a difference in it.

41 X Q. And that is practically the way it is done in the city?

A. Yes; left entirely to the contractor, I suppose, to exercise his judgment on it.

(By Mr. KNIGHT:)

42 X Q. You think that the price of a pavement is not dependent on how the pavement is formed into blocks and whether or not it consists of blocks; one block pavement is as good as another as far as the material of which the blocks are made is the same, is it not?

A. Well, no; I can't say one block pavement is as good as another if laid so that it would make a ragged joint; it would not be as good as one that is not.

43 X Q. Suppose the joints are pressed smooth.

A. Oh, if it answers the purpoce of a pavement and makes a good, smooth pavement and joints, as I say, I would just as leave have crushed limestone or gravel.

44 X Q. You would not care how the blocks were formed?

A. I don't care how they make the joints so they accomplish the purpose.

(By Mr. BLAIR:)

274 45 X Q. Haven't you observed a good deal of pavement laid by Mr. Bruner, marked "granitoid," in St. Louis?

A. Yes, sir.

46 X Q. Isn't all joint pavement put down in blocks?

A. I don't think I have seen any laid in blocks more than ordinarily; four or five feet and sometimes six or seven feet wide.

47 X Q. No blocks; but say in a continuous pavement laid by him, marked "granitoid"?

A. No, sir; I don't think I have except in floors.

Signature waived.

At this point, by consent, the further hearing of the testimony in this case was adjourned until to-morrow, October 29, 1887.

OCTOBER 29, 1887.

Parties met pursuant to adjournment.
Present as at the last hearing.

WILLIAM SHANNON, being sworn and examined on behalf of the complainant, testified as follows:

(By Mr. BLAIR:)

1 Q. Explain the nature of the Schillinger improvement in concrete pavements.

A. The Schillinger patent calls for a concrete pavement laid plastic with some material, either tar paper or its equivalent, between the blocks for the purpose of making them independent of each other, so that they can be removed without injury to the adjoining block.

2 Q. What is the effect of the improvement with reference to the action of the frost upon the pavement on the settling of the ground?

A. It lets the blocks move free and independent of each other, so that there is no danger of breaking.

3 Q. What, in your opinion, would be the result of the frost
275 and of the settling of the ground upon a concrete pavement composed of the usual materials but laid in the ordinary thickness if the pavement were laid in a continuous sheet?

A. I think it would break up badly; in fact, the weight of the stone would break itself from the natural settling of the ground and even if the frost didn't interfere with it.

4 Q. Would these fractures be regular or irregular?

A. Irregular.

5 Q. What effect would that have on the value of the pavement?

A. A sidewalk badly broken up I do not think would be worth more than the laying value.

6 Q. Is the effect upon its appearance or use, or both?

A. On its appearance in the first place, and, in the second place, where the pavement breaks up irregular the joints become ragged and it looks bad and will not last as long as if it was in solid blocks.

7 Q. Do you consider a pavement broken in that manner worth more or worth less or worth as much as 20 cents?

A. Well, I would not consider it worth over 15 cents a foot.

8 Q. Is that your estimate of its value?

A. Yes; a pavement that will break up badly I would not consider worth over 15 cents; I do not think it can be sold in the market for that.

9 Q. You are now speaking of a pavement laid in continuous sheets?

A. Yes, sir.

10 Q. Suppose for instance a pavement made of concrete, laid in

plastic form, and that after the formation of one block in the usual form of construction the scantling or marker should be removed and another block formed and laid directly against the one already laid, and the second block tamped or rammed down to get it solid, and the pieces of stone in the mortar squeezed into the holes
276 of the preceding block in saw-teeth fashion, so that the blocks when set could not move among each other as they ought to move, what do you, as an expert, estimate the value of such pavement in the city of St. Louis worth—such a pavement having a foundation structure of cinders eight or nine inches thick, composed of crushed granite and Portland cement, crushed and being thoroughly mixed while wet and laid in a plastic state, there being used no tar paper or its equivalent between the joints?

A. Well, my experience is—and I have experimented somewhat on this—*is* that you make one block and remove your scantling, and then go to work and fill in and make another block and ram it, and it will interlock; of course, if it breaks it will break where the scantling was, that being the weaker point, but it will interlock, so that block cannot be removed without injury to the other; that it breaks along with the joint; it will break irregular; that is my experience.

11 Q. What is the value which you place on such a pavement?

A. I would not put a value on a pavement of that kind over 15 cents a foot, because I have got to guarantee my walks to not crack, and if I had to lay them in that way I am sure they would crack, and I would have to take them up and put them down again.

12 Q. I wish you would explain the interlocking process. What causes the interlocking?

A. Well, the first block after it is made is soft; the scantling is never there to exceed an hour at the farthest until that is moved; not that cement has become set a little, but not hard, but, the granite being rough, and putting in the next block and rammed down so as to make it solid, it is bound to squeeze in the other block and interlock the same as my fingers; it would shove into the other block.

13 Q. Is any pressure required in constructing these blocks to give solidity?

A. Yes; we use a tamper; that, I guess, will weigh about
277 15 pounds; it is 12 inches square, and we do what I call a pretty heavy tamping.

14 Q. What do you mean by "tamping"?

A. It is what we call a tamper, steel plated with a handle in it, and a man goes over the block and pounds it down—what we call tamping. The tamper is a steel plate half an inch thick, 12 inches square with a socket in the center and a handle about five feet long, and a man catches hold of it the same as if he was churning and tamps that block all over.

15 Q. With what force is the tamper applied?

A. About as heavy as a man can bring down with a 15-pound tamper. I don't know what the force would be.

16 Q. What would be the effect of this tamping process upon the larger stones in the plastic mass?

A. Well, of course, as you tamp down they are going to give at the weakest point, and if they lie near the joints they will squeeze over into the other block.

17 Q. That squeezing over into the edge of the last block formed constitutes this interlocking result that you speak of?

A. Yes, sir.

18 Q. In what way does the Schillinger improvement do away with this or modify the result?

A. By placing tar paper or its equivalent between the joints it leaves the joint undercut, so that you can go to work and remove one block without injuring the other. We put in sand after we are through with making the block and then go to work and cut it right over this joint and mark it with a trowel or marker.

19 Q. In your judgment, is it practicable to make a concrete pavement laid in a plastic state where blocks are laid in immediate succession without the interposition of some substance between the blocks?

A. A man cannot make a sidewalk without interposing something permanently or temporarily between the blocks because they will adhere and interlock and make a bad walk.

278 20 Q. What is your experience in concrete pavements?

A. In what way?

21 Q. How long have you been observing and experimenting in the construction of concrete pavements?

A. About three years.

22 Q. Where?

A. In St. Louis.

23 Q. How much paving work have you done?

A. Well, I can't tell you accurately; I have laid, I guess, 20,000 feet, though, or more.

24 Q. Did you lay without interposing some substance between the blocks?

A. No, sir; I did not.

25 Q. Have you done any work for Mr. Bruner?

A. I solicited for Mr. Bruner the first year I was here.

26 Q. Do you know of any pavement, concrete pavement I mean, laid in the city of St. Louis in which no foreign substance is interposed, either permanently or temporarily, between the blocks to prevent this interlocking you spoke of?

A. I do not know of any.

27 Q. In your judgment, how much value does the Schillinger improvement add in the construction of concrete pavement, divided into blocks, where the blocks are laid in immediate succession while plastic?

Objected to as irrelevant and incompetent, as it fails to address itself to the point in issue; makes — in the estimation of damages.

A. From 10 to 12 cents a foot.

28 Q. What part of the profits of laying the Schillinger or granitoid pavement is due to the Schillinger invention?

A. I consider the same question I just answered a minute ago; from 10 to 12 cents a foot.

(By Mr. YOUNG:)

29 Q. Have you noticed Mr. Bruner's method of laying this
279 pavement since the expiration of this patent, on the 19th of July, 1887? And, if so, state what his method is.

A. Mr. Bruner is making joints, I believe, about the same as he used to, as near as I can see, since the 19th of July.

30 Q. Please explain how he used to make them.

A. He used to make them by putting in wood. I have not seen him put any wood in since, but he now puts in strips of sheet iron or something of the kind that runs between the blocks until he gets a block finished and he then pulls it out, which leaves an open joint there.

Cross-examination by Mr. JUDSON:

31 X Q. When you say 10 to 12 cents a foot, as to the value of what you term the Schillinger improvement in making a pavement, do you base that in any actual transaction in the market or is it simply a conclusion of your own?

A. I do not think a pavement can be sold in the city of St. Louis laid plastic without joints.

32 X Q. So, when you say 10 to 12 cents that is your own conclusion in your own mind, because you don't think such kind of a pavement can be sold at any price. Is that the idea?

A. I don't think a man can sell over 15 cents a foot and not make joints.

33 X Q. Why say 12 cents rather than five cents or 10 cents or any other sum?

A. A man might be willing to give half price. I have never tried it, but I think Mr. Bruner himself or any business man in the city of St. Louis will not take a walk which is liable to break for over 15 cents a foot.

34 X Q. But why say 15 cents a foot—that is what I am getting at—rather than five cents or 10 cents? Did you ever know a man to pay 15 cents a foot for a pavement of the kind you speak of?

A. No, sir.

35 X Q. Did you ever hear of a bid being taken for that
280 kind of a pavement?

A. No, sir.

36 X Q. Why do you think it is worth 15 cents, then?

A. I am giving an opinion.

37 X Q. What is that opinion based on?

A. On the knowledge I have of the business. I can't go and take a bid from anybody to put down a sidewalk unless I guarantee it. If I put that down and it breaks I have to take it up, and I must do that at my own expense.

38 X Q. Do—you- conclusion as to 15 cents or whatever sum you choose to put upon it is based upon your idea that a pavement laid in any other way would not answer the purpose, is it?

A. A plastic pavement cannot be laid without joints to be of any value.

39 X Q. So, then, your claim of 10 cents or 12 cents is based on the idea that the entire benefit of having joints and thus preventing cracking is due to the Schillinger patent, is it not?

A. Yes, sir.

40 X Q. And that is the Schillinger method is not followed then as you understand it there will be no joints, and consequently the advantage of the joints would be lost and consequently the pavement will be worth that much less in your opinion; that is your idea, is it not?

A. The pavement would break up and not be worth over half price.

41 X Q. But suppose the pavement would not break up, what then?

A. It can't be laid without breaking.

42 X Q. But assuming that it would not break, what then?

A. It can't be laid without breaking.

43 X Q. But I am asking now on the supposition that it would not break.

A. A four-inch pavement of stone itself will break if there is enough weight gets on it. Make a stone 25 by 12 and its own weight will break it.

44 X Q. But suppose a pavement was laid which will not
281 break, would it still be worth 10 to 12 cents less?

A. That is not a supposable case.

45 X Q. So, then, you base the whole of your testimony upon the idea that it is a supposable case that a pavement can be laid in blocks by any other than the Schillinger method which will not break?

A. I claim pavements cannot be laid plastic without laying it in blocks.

46 X Q. By the Schillinger method?

A. Yes, sir.

47 X Q. And on that basis you gave your testimony, that is it, isn't it?

A. Yes, sir.

48 X Q. Did you ever hear of anybody's paying 15 cents for an artificial stone pavement laid in blocks?

A. No, sir.

49 X Q. Are you still in the stone-pavement or artificial stone-paving business?

A. Yes, sir.

50 X Q. Do you always use what you call the Schillinger method?

A. Yes, sir.

51 X Q. That is by the interposition of some separating material in making the blocks?

A. Yes, sir.

52 X Q. Has all you have laid been laid according to that method?

A. Yes, sir; to the best of my knowledge.

Signature waived.

JOHN A. BLACKBURN, sworn and examined, testified as follows:

(By Mr. BLAIR:)

1 Q. State your name and residence and occupation.

A. My name is John A. Blackburn; I reside in St. Louis; my occupation is manufacturer of stone.

2 Q. How long have you been in that business?

A. This is the fourth season since I began the business.

3 Q. Are you familiar with concrete pavements known in
282 St. Louis as the Schillinger pavements and concrete pavements known as the granitoid pavements?

A. Somewhat familiar with them; yes, sir.

4 Q. Do you know how they are constructed?

A. Well, yes; I think I do.

5 Q. What is your opinion as to the practicability of making a concrete pavement continuous, say from 25 to 50 feet, composed of Portland cement and crushed granite, with the usual foundation, laid continuously without joints or blocks—without being divided into blocks?

A. My opinion is it is not practicable to make blocks that way and make them continuous.

6 Q. Give your reasons.

A. Well, it is a difficult matter to make a long walk without the weight of the material sag-ing and cracking the walk, even of its own weight, and should any water be caught underneath them and freeze the expansion of the water alone, where the blocks are four inches thick—the weight of the stone will not be sufficient to hold it and it must crack.

7 Q. What is such a continuous pavement worth when cracked irregularly?

A. Well, that is a question I cannot answer.

8 Q. Can't you make an estimate of what you think it is worth?

A. I can give my idea, but as to saying what it is worth I can't state.

9 Q. Give your opinion as an expert.

A. I can only say, as to myself, that if I was having one laid that I would not want one laid, to have it continuous 50 by 12 feet wide, without joints or blocks in it—that is, for a durable walk.

10 Q. What value do you think it would have in the market?

A. Well, that is another difficult question to answer. If people who are buying these walks were fully posted my impressions are that they would take one readily and would not want the other. If they took one that had blocks they would not want the other at all, for the reasons I have just stated.

283 Cross-examination by Mr. JUDSON:

11 X Q. I suppose what you mean to be understood as saying is that for a pavement which it is known would crack there is really no market at all?

A. Yes, sir.

12 X Q. If a man knew in advance a pavement was going to crack nobody would want it?

A. I don't think they would.

13 X Q. There is no market price for a cracked pavement?

A. I do not know of any one being sold.

14 X Q. Did you ever hear of one being sold?

A. I never did.

15 X Q. Did you ever hear of a price being put on a pavement that would crack?

A. I never knew one sold, and consequently there would be no price.

16 X Q. So there is no market price for such a thing?

A. I never knew of any being on the market and there can't be a market price.

17 X Q. The market price for an artificial pavement is fixed on the basis that it will be a durable pavement, is it not?

A. Yes, sir.

18 X Q. But it has no relation as to the method in which the blocks shall be laid, though, has it?

A. I could answer that only in an explanatory way. I never knew of a pavement being laid other than in joints or blocks.

19 X Q. You never knew of but one standard price for that?

A. I have known different prices for that; it is generally owing to the material.

20 X Q. The cost of the material?

A. Yes, sir.

21 X Q. But not owing to the way the particular blocks are to be laid?

A. No; I never knew of a walk being laid in plastic material other than in joints—that is, to make any sized walk. A man might lay one solid pavement, of course, but to make a walk 50 feet in length I never knew one or saw a walk for outside use laid down but what it was made in joints.

284 22 X Q. There is no such thing as saying there is a difference in the market price between one kind of pavement and another in the market?

A. I don't understand what you mean—one kind of price, that I don't understand.

23 X Q. Between a pavement made with joints—a pavement in blocks and a pavement not made in blocks.

A. I never knew one that was not made in blocks—that is, speaking largely of a sidewalk. I have seen stone laid.

(By Mr. YOUNG:)

24 Q. Mr. Judson asked if you knew of any market for a cracked pavement. Do you know of any market in the city of St. Louis for a continuous plastic pavement?

A. I never knew one to be laid and consequently couldn't have a market—that is, as far as my knowledge goes.

25 Q. How long have you been in the city of St. Louis?

A. I have been here just a year, lacking a few days.

26 Q. How long have you been in the business you are engaged in now?

A. This is the fourth season.

27 Q. From what State are you?

A. I was in St. Paul before I came here.

28 Q. Did you observe there or not the Schillinger pavement in St. Paul?

A. I knew of their being laid there; yes, sir.

29 Q. Do you know what effect the cold had upon them there?

A. They were laid in slabs there. Some of them broke up even being laid in slabs.

30 Q. Can you state what is the effect here in St. Louis of cold upon this Schillinger pavement? You just now were speaking something in reference to the heat and cold in the ground on the water underneath them.

A. It would require a good deal of explanation to give the details as to the effects of cold.

31 Q. Please give it.

285 A. If water will get under a pavement during the cold weather, extreme cold weather, that water must expand and something must give. Now, then, if the cinders are thoroughly saturated with water below and it freezes solidly the whole stone must lift bodily, or if the water is at one corner of the slab and not at the other, that corner must rise with the expansion of the water. If the stone or slab has bed enough and is solid enough, so that the rising of one corner will carry its strength clear through, it may not crack. If the stone is not solid enough it will crack—that is, on the assumption that the water cannot get out, and it must expand and something must give.

32 Q. That is the effect of the cold on this?

A. That is the effect of the cold.

33 Q. Now, what would be the effect of heat?

A. Heat would raise it.

34 Q. Then, with these joints in the pavement these blocks would move among each other?

A. They can move among each other, unless the whole walk is very thoroughly saturated with water clear along, and one rising might raise the whole business.

(By Mr. JUDSON:)

35 X Q. I suppose the smaller the block, other things being equal, the less its liability to crack?

A. Well, yes; that is the case—that is, with the same thickness.

Signature waived.

ST. LOUIS, *December 5th*, 1887.

Parties met pursuant to adjournment.
Present as at the last hearing.

Testimony for the Respondent.

FRANCIS J. SULLIVAN, sworn and examined on behalf of the respondent, testifies as follows:

286 Direct examination by Mr. JUDSON:

1 Q. State your name and occupation.
A. My name is Francis J. Sullivan. I am inspector of sidewalks for the city.
2 Q. How long have you held that position?
A. About two years.
3 Q. What are your duties as such inspector?
A. To examine the laying of sidewalks and do what is necessary—to see that the proper material is laid.
4 Q. Are you familiar with what is known as the granitoid pavement?
A. Somewhat familiar with it.
5 Q. Have you observed any pavement laid by Mr. Shannon, the pavement contractor?
A. Yes, sir.
6 Q. Have you observed any pavements in St. Louis made of what are called manufactured artificial blocks?
A. Yes, sir.
7 Q. That is manufactured away from the premises and then brought and laid the same as natural stone?
A. Yes, sir.
8 Q. Are such pavements laid in the city?
A. There are.
9 Q. Have you observed what different methods there are otherwise than the method of dividing the pavement into blocks?
A. You mean the soft material?
10 Q. That is, where the soft material is laid on the premises in a plastic state, have you noticed the different methods of dividing the pavement into blocks or separating it?
A. No, sir; I do not know as I have.
11 Q. Have you ever observed it laid in alternate blocks?
A. Yes; I have observed that.
12 Q. That is, laying one and a third and then returning and laying the second between?
A. Yes, sir.
13 Q. Allowing the two first laid to dry?
A. Yes, sir.
14 Q. You are familiar with that method?
A. Yes, sir.
15 Q. Now state from your judgment and experience as an in-

spector of those pavements whether there is any difference,
287 so far as you observed, in the durability and efficiency as a pavement, assuming the material to be the same and the size of the blocks to be the same where the blocks are laid upon the ground in a plastic state or where the blocks are manufactured away from the premises and brought to and laid as natural stone.

A. Do you mean if I noticed any difference as to their wearing quality?

16 Q. Have you observed any difference as to their wearing quality?

A. I don't think I have.

17 Q. And as to their efficiency as a pavement?

A. No, sir; I don't know as I have, providing, as you say, the same material is used.

18 Q. Yes; I assume that in all cases, and the same thickness.

A. Yes, sir.

19 Q. Do you know anything as to the cost in St. Louis of this artificial pavement?

A. Well, I can't swear as to the cost of them; it is generally supposed to be from 20 to 30 cents a foot, or more than that.

20 Q. I mean the cost—the price of them to the city or to the owner of the property.

A. Yes. What I mean, of course, is that I don't know what these gentlemen, contractors, place their figures at.

21 Q. State whether or not, to your knowledge, there is any market price in the city of St. Louis for cracked pavements.

A. I never heard of any such thing.

22 Q. State whether or not you ever heard of cracked pavement selling for 12 to 15 cents a foot or for any other price.

A. I never did; never heard of such a thing.

23 Q. State whether or not there is any difference in the market price in the city of St. Louis in a pavement based solely upon the different method or peculiar method of dividing the
288 pavement into blocks.

A. Not that I know of.

24 Q. What can you say from experience as an inspector as to the liability of this artificial pavement to crack?

A. I think they are all more or less liable to crack—that is, by frost.

25 Q. I believe you have already stated you are acquainted with some of the pavements laid by Shannon?

A. Yes, sir.

26 Q. Have you observed any cracking in this pavement?

A. Yes; I have observed one of them cracking.

27 Q. Where was that?

A. On the northeast corner of Eighth and Chestnut street.

28 Q. When was that pavement laid?

A. This summer.

29 Q. What is the cause of the cracking of this pavement?

A. Well, it is generally supposed to be that it is caused from the upheaval of the pavement caused by the frost.

28 Q. From your observation of the artificial manufacture of blocks which are brought to and laid on the premises in a hardened state, the size and thickness and material of the blocks being the same, are they any more liable to crack than blocks laid on the ground in plastic state?

A. Not if they are properly laid.

29 Q. How is it if pavements are laid on the ground in alternate blocks in a plastic state—the first block and then the third block—as to their liability to crack?

A. I don't think that ought to make any difference.

Examined by Mr. KNIGHT:

30 Q. You are acquainted with the method used by Shannon?

A. Somewhat; yes, sir.

31 Q. Do you know the difference in the price of pavements laid in that method and pavements laid in the other method you mentioned—that is, brought and laid on the walk in a hardened state or laid in alternate blocks?

A. No, sir.

289 32 Q. You don't know any difference in the market price?

A. No, sir.

Cross-examination by Mr. YOUNG:

33 X Q. You were examined in this case once before, were you not?

A. Yes, sir.

34 X Q. Did you allude to these alternate blocks in that testimony?

A. I did not.

35 X Q. You don't pretend to be an expert in laying concrete pavements?

A. No, sir.

36 X Q. What are the duties of your office?

A. Just what I told you: to inspect the laying of these walks and see that the proper material is used.

37 X Q. You know nothing as to the value of pavements, as to their durability, comparing one kind with another, from your own experience, do you?

A. No, sir.

38 X Q. You are a friend of Mr. Bruner's, are you not?

A. No, sir; no more than anybody's else.

39 X Q. When did you see these alternate blocks laid—about what date and at what place?

A. I can't give you the date or place, but I remember the fact.

40 X Q. Give me any pavement that you saw laid, any one.

A. On Olive street, between 6th and 7th, on the north side.

41 X Q. What amount?

A. I can't tell you.

42 X Q. What year was it?

A. I think last year.

43 X Q. Are you certain of that?
A. No, sir; I am not certain of it.
44 X Q. Are you certain it was six months ago?
A. Yes.
45 X Q. Are you certain it was before May?
A. Before May?
46 X Q. Yes.
A. I think it was.
47 X Q. Try and see if you can fix the date.
290 A. I could if I looked over my books and saw when the permit was issued.
48 X Q. Your books are in the office?
A. Yes, sir. I could look over my books and furnish the date exactly.
49 X Q. Who laid it?
A. Mr. Bruner.
50 X Q. Don't you know that when you inspected it it was after the decree in the United States court enjoining him from laying this pavement?
A. No, sir; I do not. It might possibly be, too.
51 X Q. You don't pretend to know whether it was or not?
A. No, sir.
52 X Q. Can you give me a pavement in the city of St. Louis or anywhere else that was ever laid in alternate blocks, in this or any country?
A. In any other country?
53 X Q. Yes, or in any other city.
A. No, sir.
54 X Q. That is the only one you remember ever to have seen?
A. That is the only one.
55 X Q. You don't undertake to speak about the value of that kind of pavement?
A. No; I don't undertake to speak about the value of that kind of pavement.
56 X Q. You don't pretend to give an opinion about the value of that kind of pavement in contrast or in comparison with a jointed pavement, do you?
A. That pavement is jointed.
57 X Q. I mean where it is jointed at the time it is laid down on the very day. You don't undertake to give an opinion about that, do you, as to the relative value of this pavement?
A. No, sir.
58 X Q. I will ask you one other question: How much pavement have you ever made elsewhere than where it is wanted and brought and laid down? And give me the place in the city where it is laid.
A. There is one laid in front of the Exposition building, and one laid on the northeast corner of 8th and Olive that extends
291 from the alley west on Olive, and one laid here in front of the old "When" clothing-house, and the one on the northeast corner of 4th and Elm street-.

59 X Q. What is the size of those blocks?
A. I should judge about 18 inches.
60 X Q. What is it called, tiling?
A. Yes.
61 X Q. You don't know anything about the value of that pavement laid there before the Exposition building, laid a few months ago?
A. You mean as to cost?
62 X Q. The cost, the value, or durability.
A. No, sir; nothing about it.
63 X Q. You don't undertake to speak on that subject?
A. I don't undertake to speak on it at all.

Examined by Mr. BLAIR:

64 X Q. How think are these tilings laid in front of the Exposition building?
A. About an inch and five-eighths, or 2 inches and an 8th, I think it is.
65 X Q. Isn't that classed as a different style of pavement from the granitoid pavement and pavement laid under the Schillinger process?
A. Yes, sir; that style is hard tiling.
66 X Q. Then, when you speak of having seen blocks cast at some other place and brought and laid in blocks, you refer to the hard-tiling pavement?
A. Yes, sir.

Examined by Mr. JUDSON:

67 X Q. When you say you don't undertake to give an opinion as to the durability of the pavement, I wish to ask you how it is any person can give judgment as to the durability of a pavement.
A. I don't know, unless they wait to see how it wears.

Signature waived.

292 P. M. BRUNER, sworn and examined on behalf of the respondent, testified as follows:

(By Mr. JUDSON:)

1 Q. The question has been asked of the complainant in the case, to which we objected, but the testimony was admitted, and we therefore ask the same question of the defendant: In your judgment, how much value does the Schillinger improvement add in the construction of a concrete pavement divided into blocks where the blocks are laid in immediate succession while plastic?
A. Do you mean practically?
2 Q. I mean its value.
A. Well, I never gave any estimate or made any contracts or saw a contract made in a case of that kind, so I can't tell what would be the value if that is the merit of the question.

3 Q. I will ask you the following question, which was also asked of the complain-t: What part of the profits of laying the Schillinger or granitoid pavement is due to the Schillinger invention?

A. I should say none, because you can accomplish anything without the use of the Schillinger patent, and I testified at the previous hearing that I laid a block a thousand feet without using the Schillinger patent, and I stated then that the work was superior to any of the Schillinger pavement ever shown here or in New York, and nobody has questioned it, and I could have and would have used that if I had thought the method I did adopt would be decided to be an infringement, if that is what is wanted.

4 Q. State whether there is any market price in the city of St. Louis for cracked pavement.

A. I have never known anybody to sell or buy any.

5 Q. State whether there is any market price for pavement or any difference in the market price or whether there has ever been during the period covered by this controversy, based upon any
293 difference in the method of dividing the pavement into blocks.

A. I have never been asked how I am going to make my blocks.

6 Q. The question is whether there is any difference in the price based upon any such difference in the method of laying blocks.

A. Well, as far as my experience goes there can be no difference, because I have never been asked anything about it.

7 Q. Have you ever heard of any such difference?

A. No, sir.

8 Q. Do you know of any pavement laid in the city by alternate blocks?

A. Yes, sir; I laid a number.

9 Q. How long is it since they have been laid?

A. Well, there is one of them that I laid on 7th and Chestnut (Olive), and adjoining Barr's place running westward, I laid two years ago, and some of the work done on 3rd and Washington avenue was laid that way. How much I can't recollect; not all of it, but I have done it frequently, but I can't tell just where I did it or where I didn't do it. Occasionally I did it and for this reason: I would lay one block in front of a man's entrance so the next day he could use that, and the next day he was using that and I laid the next block; but at 7th and Olive is the only one I have special memory of, because the whole pavement was laid that way.

10 Q. Do you know of any such pavement being laid by parties other than yourself in St. Louis?

A. Oh, yes; Schillinger himself laid this one at 5th and Olive.

11 Q. You mean Schillinger, the original patentee?

A. Yes, sir. He being the contractor for the job and John Soell, which is his foreman, who testified in this case, he laid that pavement in that way.

12 Q. Have you ever known of a pavement being laid that
294 way anywhere else than in St. Louis?

A. I have heard of it all over the country where they were trying to get around the Schillinger improvement.

13 Q. Now, how have these pavements laid in this way—that is, the workmanship and the material and the size of the blocks being the same—how have pavements laid in this manner compared in appearance and durability with other artificial pavements?

A. They are equal and should be a little superior.

14 Q. Why a little superior?

A. Because there is never any danger in working at it that way, of moving or disturbing the old block when making a new one against it.

15 Q. What have you to say as to the laying of pavements which are in a loose state before being laid on the premises?

A. If they are made in the same manner as other pavements they will answer the same purpose as other pavements.

16 Q. I say, assuming the material—the size of the blocks—to be the same and all other things being equal?

A. Superior. I should think they are a little.

17 Q. Do you know of any such in St. Louis which have been laid in that manner?

A. Yes; a few blocks that were laid in large sizes; but a great many pavements have been laid in smaller sizes.

18 Q. These variegated pavements are nearly all laid that way, are they not?

A. Not nearly all, but about equal between what is called the Schillinger and this—the amount laid in the city.

19 Q. Assuming the size of the block and the material of the block to be the same, what can you say as to the durability of this pavement as compared with the other?

A. At least equal.

20 Q. What can you say as to the appearance and durability of this pavement as compared to the others?

A. At least equal.

295 21 Q. What can you say particularly as to the durability?

A. The last witness here happened to state a point that I think I can confirm—that is, that all these pavements have a great tendency to break, no matter what kind of joints and what kind of material; rather more so sometimes than stone, and if they were made in blocks like stone I think that part, that particular part of cracking where we expect they ought not to crack, would be less liable in the manufactured blocks than in the others, other things being entirely the same, the kind of material, thickness, and workmanship; but definitely I would say they are at least equal.

22 Q. Have pavements laid in that manner, of what are called tiled pavements—have they been made that way long enough for a fair judgment to be made as to their durability as compared with other artificial pavements?

A. Yes, sir; compared with other artificial-stone pavements of the same size of blocks.

Mr. YOUNG: What size?

The WITNESS: I would say one or two foot square—that is, Schillinger laid pavements that way and I lay pavements that way, and mine are all the time superior to those made in this way.

23 Q. All these questions are based upon the assumption that the size of the blocks are the same, both as to the superficial measurements and thickness.

A. In this country very few pavements are laid where they have been manufactured in blocks, but in Europe they do lay them.

24 Q. Speaking of the liability of pavements to crack, other things being equal, I understand the thicker the pavement the less its liability to crack?

A. Yes, sir.

25 Q. And the smaller the pavement, other things being equal, the less its liability to crack?

A. The smaller the blocks; yes, sir.

296 26 Q. That is what I mean. Have you observed the pavements laid by Shannon, in St. Louis?

A. Oh, I have taken a little notice of them—not any particular notice.

27 Q. Did you notice any cracking in his pavements?

A. Yes, several; particularly one that was alluded to by his own witness the other day, at MacAdaras, laid on Ewing Ave. and Lucas avenue. I went there to examine the blocks since then and I found out of about 100 blocks 10 or 12 are broken, which makes a good eight per cent., at least.

Examined by Mr. KNIGHT:

28 Q. Can you mention any other pavement laid by Shannon that is broken?

A. Cracked; yes; 7th and Olive street. There was three blocks broken and that pavement had nothing to do with any frost, which was a quite noticeable fact to me, and then on 2613 Locust the owner came to me and wanted me to look at the stone which laid off by itself and which I don't think had neither tar paper nor any other joint, which had broken into three parts.

29 Q. You spoke of having laid alternate blocks and of having laid tiling or blocks manufactured away from the premises, also made, of course, under what has been held to be an infringement of the Schillinger patent. Is there any difference in the market value or price of those pavements—any known difference?

A. There is not.

30 Q. There is no establishing price—no particular established price for what is known as the Schillinger method?

A. No, sir.

Examined by Mr. JUDSON:

31 Q. Mr. Bruner, something has been said in the testimony about the tendency to interlock when one block laid in juxtaposition with another is rammed down. Now, are you ac-

297 quainted with the material known as tar paper?

A. I am.

32 Q. If one pavement—one block—is laid in a plastic state immediately adjoining the other, separated only by the interposition of tar paper, when can you say of the effect of such ramming as would

force the mortar to interlock? What would be the effect of the interposition of tar paper between them?

A. If ramming is necessary to make a solid block, which is not so; but if it is, and you do ram hard enough to shove over into the other block, the interposition of tar paper will not resist that to the least degree.

Examined by Mr. KNIGHT:

33 Q. This tar paper is quite stiff, is it not?

A. It is more yielding than the stuff itself.

(By Mr. JUDSON:)

34 Q. You mean more yielding than the mortar?

A. Yes; it is.

35 Q. So that the same ramming which would drive the mortar in would drive the tar paper in with it?

A. Yes. Perhaps I ought to explain something there which may have puzzled some before the court in the hearing of the infringement case. I endeavored to show and direct the attention of the court to the fact that the Russ method entirely supersedes the Schillinger, and even to show that it has advantages over the Schillinger method, and to do so I made a supposition and said if you rammed one block against another the stiffness of the wood partition interposed between the two blocks will keep the stuff from pressing over. Now, some witnesses seemed to have jumped to the conclusion that always must happen, when, in fact, I might say it never happens, because if you ram hard enough on any block to carry the other over it is pulled out and creates a bulging that shows a serious crack which no workman would allow to happen, and I have
298 not had it happen to me, nor have known of its happening to anybody else, so that I might say that is a supposition case to prove the superior value of the Russ patent, but I never heard of that idea before I brought it out in court, yet they seem to try to make an application of it to show that it was a very dangerous thing, yet the thing really never happened, but if it did tar paper would not do any good.

Cross-examination by Mr. YOUNG:

36 X Q. Do you adhere to all the testimony which you gave in this case on the hearing of the merits?

A. Substantially, I do. If not I should like to have it presented.

37 X Q. Well, you seem to have it in your mind pretty well. Now, I will ask you to state to the master how many feet of this alternate pavement you have ever put down in the city of St. Louis, and tell me where the pavement is.

A. I laid some at 3rd and Washington ave.; how much I can't tell.

38 X Q. About how much?

A. I can't tell. I simply know I did it.

39 X Q. 25 feet?

A. I don't know. I must have laid more than that. If I laid one block it would be more than 72.

40 X Q. Did you lay as much as 72?

A. On 7th and Olive, the whole sidewalk.

41 X Q. *The* is all?

A. No; I laid various other places, to a smaller extent; special parties.

42 X Q. During all the laying of this 75,000 feet of the infringement of the Schillinger patent, you don't remember to have laid but those two jobs or contracts?

A. Positively, no.

43 X Q. Have you laid any of it in that way since the injunction was issued against you?

A. A few blocks on Lindell Ave., I believe.

44 X Q. How did you lay that pavement, about 600 feet
299 on Olive? Didn't you lay that pavement there this last summer?

A. This summer.

45 X Q. Since the injunction was granted, how did you lay that?

A. One block against the other without anything interposed.

46. Did you put a piece of tin between it afterwards?

A. No, sir. I wish to explain that right here.

47 X Q. Well, explain it.

A. That piece of tin is covered by a patent which I bought from the party who invented it in New York. The idea of that tin is to protect the block. When you scrape off the excess of the material you are apt to scratch the whole top surface of the finished block, and so this patent, which is called a patent corner protector, is laid on the block, and this comes over the edge a little ways and is used to guide a stock of wood on that does the scraping. Now, that is put on while you are putting the lower course on, and when you put the upper on you remove that stick because then there is no danger of injuring it.

48 X Q. I am not talking about the method. I asked what you did as a matter of fact?

A. I used such a tin-foil protector.

49 X Q. Did you lay any concrete plastic pavement in front of Mr. Judson's house?

A. Yes, sir.

50 X Q. How did you lay that?

A. I don't recollect that.

51 X Q. Was it granitoid pavement?

A. Yes, sir.

52 X Q. Laid in blocks?

A. Yes, sir.

53 X Q. About what size?

A. About 2 by 6, I guess.

Mr. JUDSON: My impression is it was laid in alternate blocks.

The WITNESS: I can't recollect whether we laid it that way or not, but I presume so.

54 X Q. Now, you have been asked if there was any market for

cracked pavement; of course, you answered very truthfully
300 there is none. I will ask if there was any market or any demand or value in the last four years, during this infringement of yours, of what is known as a continuous plastic pavement?

A. What do you mean by "continuous"?

55 X Q. Put down at full length, at the same time, without any joints, in front of the block, store, or house or whatever it is; for instance, 75 by 12, or 60 by 12, or 25 by 12.

A. No; nobody has asked about it and I have never proposed to lay any.

56 X Q. You made a remark that you always gave a guarantee. What is the substance of that guarantee that you give when you are asked to put down a pavement?

A. That the pavement will prove good. I wish to say there is no such demand for it, now that they can lay it. At the city hall in Philadelphia——

57 X Q. Well, we are talking about St. Louis.

A. (Continuing:) A number of blocks have been laid there since 1878, and they are all good yet.

58 X Q. When were you in Philadelphia?

A. Last winter.

59 X Q. You don't know what happened the latter part of the winter, do you?

A. I was there four or five years before that.

60 X Q. We are dealing with the present, and we want to know what is going on here. So you know of none of that kind of pavement being put down this last four or five years, do you—75 by 12, continuous, plastic, concrete pavement?

A. No, sir.

61 X Q. You say it is not necessary to ram a pavement to make it durable?

A. No, sir.

62 X Q. Well, why did you make the comment about the reason you abandoned that system was that it would interlock? How did it happen to interlock unless you jammed it down?

A. I didn't say so. I say this, that if you rammed it it would interlock, and therefore the Russ method would be a means of avoiding it.

63 X Q. Why did you find it necessary a few moments ago
301 to comment on those things when they didn't exist?

A. To bring out the merits of the Russ patent over those of the Schillinger method.

64 X Q. Then you had rammed it down hard or you would not have known this, that that was the consequence?

A. No; just an ordinary mechanical ability will show that without experimenting that in the one case the block is undercut and that in the other case the least bit of a movement would make the block overcut.

65 X Q. Please state what kind of an instrument you used in tamping this pavement.

A. A rammer.

66 X Q. Of how much weight?
A. Such as described by your witness.
67 X Q. About what weight?
A. I don't know.
68 X Q. How much do you think?
A. I don't know.
69 X Q. Did you think at the time the testimony of our witness was about right as to the weight of the instrument used?
A. I dare say it is. Now, I wish to say in regard to your question about the ramming, any man that has seen concrete made out of pieces two inches in diameter on the Olive-street cable road runs like water can readily understand that such thin material as used in making sidewalks can be made to run like that, so that tamping is not a necessity if a man don't want to.
70 X Q. Isn't it usual to tamp it hard?
A. It is with me, but not everybody; but when I do tamp against joints I don't tamp as hard as I do elsewhere; I don't think anybody else does, whether that is tar paper or a stick of wood.
71 X Q. You tamp gently, do you?
A. Yes. Now the granolithic pavements are not rammed at all; they are poured in.
72 X Q. Well, we are talking about concrete pavement and kindred kinds?
302 A. Well, the granolithic pavement is the same thing.
73 X Q. Well, you can deliver a lecture on that, but we are talking about concrete pavement.
A. That is what the granolithic is.
74 X Q. Now, at the close of your 13th question you say, "I came to the conclusion that the only way to lay a pavement would be to lay them in large blocks that would lay in place simply by their own weight."
A. That is all right. I don't change that conclusion.

Examined by Mr. BLAIR:

75 X Q. Well, your conclusion, then, was: this small, hard tiling, a foot square and an inch and a half thick, was not as satisfactory as the large blocks, such as you usually lay in your granitoid pavement, are they?
A. No, sir.
76 X Q. What difference in value would you make?
A. You mean for myself or other people?
77 X Q. For other people.
A. Well, I would prefer, as I said there—I cam- to the conclusion that the large blocks are better. I prefer them; but some people want the other kind and can have them by paying for them.
78 X Q. Paying more?
A. The same price as this.

Examined by Mr. JUDSON:

79 X Q. You say paying more. What do you mean—more expensive?

A. No; charge the same for small blocks laid that way as for larger blocks the other way; but I have made the large blocks and Mr. McIlvay, who testified in this case before, has laid them.

By Mr. BLAIR:

80 X Q. Have you ever laid any?

A. Yes; I have laid a few blocks.

81 X Q. When was that?

A. Well, I laid a couple this summer.

303 82 X Q. That is since this suit begun, was it not?

A. Yes; it must have been—a couple I laid last fall as an experiment.

83 X Q. That is since this suit began, last fall?

A. They were laid last year, I understand, and the year before.

84 X Q. Which do you consider the preferable method of the two methods you have spoken of, laying in alternate blocks or forming the blocks at the yard and transporting them and placing them in position?

A. Preferable in what respects?

85 X Q. In any and all respects.

A. For making nice blocks that I think would never be liable to break any more than stone flagging, *and* those made and laid afterwards like stone would be preferable in that respect. For standing the impact of heavy weights, those made in alternate blocks or consecutive blocks I think would stand more. As for wearing, the superior quality of the wear would come for those made in another place, only in case you could have better facilities for mixing the concrete, you could then mix by machinery instead of hand; but, taking all in all, if I had everything in running order to make the blocks I think I should prefer that; but if I had others laid in place I think I should prefer that, because it is the experience of men used to it who know what to do, and a method that you have not run you don't feel as much at home in as in doing something you have been doing.

86 X Q. You said you never laid any where the blocks were cast in the yard?

A. I have some small size.

87 X Q. But large sizes you have not?

A. Only a few blocks.

88 X Q. And then, with that limited experience in that method, you are prepared to say that you think it equally desirable with the other method?

A. Yes, sir.

89 X Q. In the cost, which method is the cheaper?

A. I have investigated that; the one can be made for one cent a foot.

304 90 X Q. I ask which is the cheaper of the two methods.

A. I think making them in the yard and laying them afterwards is the cheapest.

91 Q. How much cheaper, in your judgment?

A. Oh, not enough to make any particular difference; half a cent or a cent a foot, Mr. McIlvay testified.

92 X Q. Never mind that.

A. On the strength of that I wish to answer.

93 X Q. Well, go on.

A. He says he lays his stone sidewalk for five cents a foot, digging and all, and, if that is so, I insist that my blocks can be laid cheaper than his, because they are trimmed on the edges, and if that is so they can be laid cheaper by manufacturing in the yard.

94 X Q But you never laid any?

A. Yes; a few.

95 X Q. I thought you stated a few moments ago you thought they made a superior walk?

A. In one respect simply; simply that the stone pavements are more separate than any made in any other way, more like a stone pavement—the manufactured block will be more like a stone pavement, I mean to say—and if there is anything like cracking of the sidewalks, due to a close fit or any similar thing, they will stand more on top of the stone than those made in place.

(By the MASTER:)

96 X Q. What is the pavement that is being laid on Lindell ave.?

A. That is a granitoid pavement.

97 X Q. Who is laying that?

A. I laid it.

(By Mr. JUDSON:)

98 X Q. The master means how is it laid.

A. The greatest part of it was laid while the injunction existed and the patent was in force. While that was in force I laid one block after another without interposing anything, but when the stone was hard I chiseled a groove. The reason I chiseled a groove is not because I could not make a nice groove by the usual method, but I could not make it as deep as I wanted to for fear the
305 plaintiff would say I didn't make the groove deep for the sake of appearance and for the sake of preventing a division and therefore would render myself liable. After the patent had run out I used the deep groover. This was used right along, a deep cutting, and I didn't put anything between the blocks after that.

(By Mr. YOUNG:)

99 X Q. The patent expired on the 19th of July and the injunction was in May?

(By Mr. BLAIR:)

100 X Q. Have you laid in your business as contractor and not by way of experiment a concrete pavement composed of stones that were cast and fixed at the yards, where the stones were as large as 6 x 12 and 4 inches thick?

A. Not exactly that size. I have made stones 2 x 10 and 3 x 10

and 6 x 8 and had them placed so as to test them. One I had in front of the Exposition building several years as a test, because people would be liable to drop their things on there while unloading and putting things into the Exposition building; and, to show the strength of the material, I made two stones 10 feet long by 2 feet wide and only 4 inches thick and subjected it to the heaviest kind of wear, and it never moved in a place, where any natural stone that I know of, except perhaps slate, would have broken in a week there.

101 X Q. Didn't you have irons in those stones?

A. Well, that don't make any difference if I did; I did it, all the same.

102 X Q. What was the purpose of putting irons in?

A. To add strength to it.

(By Mr. YOUNG:)

103 X Q. That was a mere advertisement in front of the Exposition building, was it not?

A. Yes; but a very practical one.

104 X Q. What is the size of that one block?

A. Two by ten; but they didn't rest on a bed at all, but on the four corners.

306 (By Mr. JUDSON:)

105 X Q. One question more. You have stated that for awhile you laid these blocks on Lindell Ave. by simply making no joint at all and having an ornamental division line chiseled at the top. How do you find that pavement laid in that manner compares with other pavements you have laid or other *en*thods?

A. They are just as good.

106 X Q. Did you lay much of that?

A. Yes; I laid a great deal.

107 X Q. How about the price you received for pavements laid in that way?

A. Remained the same.

108 X Q. Exactly the same price for it?

A. Yes. I wish to say that these blocks were laid without anything interposed; the joints are wide open and you can stick a knife in. They are wide open in these joints.

109 X Q. Why is that?

A. The shrinkage, and a little dirt gets in and the joint makes itself bigger as it gets older.

110 X Q. How do you find the e-pense of working in that method as compared with other methods?

A. Well, at the previous examination I made it would seem I had made a miscalculation. It is actually a little cheaper.

111 X Q. What is the expense of that method? Is it the hiring of a boy to do the chiseling?

A. That is all the expense, and his wages I made by it. A man while making the blocks can work faster who don't have to watch the line; could finish straight along the work irrespective of where

the blocks ended and began, and the strip of wood which I saved by not putting it in, as I had previous, amounted to three cents a foot, and that made four cents a block, and the other expense of cutting the joints were only about three cents a block, so that made a cent a block—it almost amounts to nothing.

112 X Q. That strip you refer to was a wedge-shaped strip?

307 A. Yes, sir.

113 X Q. Which you understand was covered by the Russ device?

A. Yes, sir.

(By Mr. YOUNG:)

114 X Q. Why did you after the patent expired go back to the Schillinger method of laying a pavement?

A. I didn't go back to the Schillinger method.

115 X Q. Well, what method did you go back to?

A. I used *by* own method, or rather the Schillinger disclaimer method.

116 X Q. That is what I mean.

A. Now, this point has not been brought out, and I am not so desperate in my case that I don't want to bring it out myself.

117 X Q. Bring it out.

A. I can omit that triangular piece of wood, which I asserted was a good thing, not simply a joint, but a beveled block. When you throw a concrete block the course particles fly to one side; you see that in everything you unload made of different sizes. If you make a block and shove this against the next block, along the edge, you get by that little device all the benefits of a wooden strip, because it will occupy the place between the joints between the blocks; it will not be a foreign substance and only make a joint, but a beveled joint, because it will crack off with less friction, so that I can secure the advantage of the Russ method by that simple device.

118 X Q. You can get around the Schillinger method by that?

A. No, I do not, because I think the Schillinger method is a fraud, and I wish that to go down.

(By Mr. KNIGHT:)

119 X Q. Your object in adopting the present method was to get the undercut, was it?

A. Yes, sir.

120 X Q. As in the other patent?

A. Yes, sir.

(By Mr. BLAIR:)

121 X Q. This pavement on Lindell Ave. was laid during the present year, was it not?

A. Yes, sir.

122 X Q. It has not passed through one winter?

308 A. No, sir; but Mr. Shannon's block was laid before the winter came.

Signature waived.

Rebutting Testimony for the Complainant.

WILLIAM SHANNON, being recalled, testified as follows:

(By Mr. BLAIR:)

1 Q. Mr. Shannon, I would like to have you state your opinion as to the cost of making a concrete pavement in the method referred to by Mr. Bruner, in which he speaks of casting or forming the blocks at the yard, and after they are firmly set transporting them to the sidewalk and then laying them.

A. Well, I had some experience in that kind of work when I first started into the business. I rented a yard on 12th street and went to work and made somewhere in the neighborhood of 5,000 feet in blocks. We found it took a great deal of yard room; in the first place, after a block was made we had to let it lie a week before we could move it with safety, and then we had to rack them up and leave them lay at least two or three months before they would get hard, and I have got about a thousand feet of them blocks on hand that we kept because we could find no place where they would just fit, and my experience is they can't be made and laid, at the very lowest, for less than 40 cents a foot, because of the time and bother in handling and the breakage and everything of that kind. I didn't make them as much as 6 x 12, as they were being put on a sidewalk, but if made that large they can't be made and put down at less than 50 cents a foot.

2 Q. As to the advantages of fitting them to the founda-
309 tion, how would such method be as compared with the method used by Mr. Bruner?

A. Well, they would have to be laid the same as an ordinary flagstone. We can't get a foundation so that they will lay perfectly smooth, and of course we have to raise them up and ram under the edges, which leaves the center of the block low, the same as it does in laying flagstones, and therefore I don't think it makes as good a walk as one laid plastic and in place.

3 Q. You think it takes more time to construct a walk in that way?

A. A great deal more time.

4 Q. Do you know of anybody that builds sidewalks in that way as a business?

A. No, sir; I do not; not in large blocks. It is not practicable.

5 Q. You stated the estimate of difference. How much difference do you state to be in the cost of construction?

A. Well, it would cost at least 10 to 12 cents a foot more to make it in large blocks and lay them than it would to make them right in place.

6 Q. How would the joints be laid in that way?

A. The joints would be just the same as in flagstone; they would fit up tolerably close.

7 Q. Any liability to chipping or breaking the edges in transporting and in laying?

A. Yes; they are very liable to snip the edges.

8 Q. If the edges or corners are chipped or made rough, what effect would it have on the durability and desirability of the walk?

A. It would not make as nice a walk as it would if it was perfectly smooth.

9 Q. To what extent have concrete pavements been made by constructing in alternate blocks laid plastic?

A. Well, to my knowledge I have never known but one or two laid in the city. One Mr. Bruner laid over here. That is
310 the only one I can call to memory that I saw laid in that way.

10 Q. How many men in St. Louis have laid concrete pavements; how many contractors?

A. I can't tell you.

11 Q. Can you mention some; did Mr. Hull?

A. Well, I never saw Mr. Hull lay any; I heard of it, but it would be only hearsay.

12 Q. Or Mr. Bell?

A. I didn't know Mr. Bell before he came.

13 Q. Did Mr. Hardy?

A. I saw him lay some in a walk, and I saw Mr Bruner and Mr. Soell—John Soell—and Mr. Bishop; I have seen him.

14 Q. Did any of these contractors to any extent lay pavements in alternate blocks?

A. Not to my knowledge.

Cross-examination by Mr. KNIGHT:

15 X Q. You say you don't know of alternate blocks being laid in the city of St. Louis to any extent; do you know of any being laid outside of the city of St. Louis?

A. I do not.

16 X Q. How long does it take your blocks to harden so that they can be used and put in place?

A. Made in the yard, you mean?

17 X Q. No; while in place.

A. Oh, generally use them about the 3rd or 4th day after they are laid.

18 X Q. They are hard then, are they?

A. They are hard all the time, but the block is not hard all the way through; it would not bear moving; you could not take a block up and move it with safety short of three months.

19 X Q. It gets hard on top in three or four days?

A. Yes, sir.

20 X Q. Suppose it was placed so that the air could get underneath; it would get hard on the bottom in the same length
311 of time, would it?

A. It would dry faster; yes.

21 X Q. And the ends and sides would dry faster also, would they not?

A. But my experience in the yard was we could not move them

under a week or ten days after they were made, so that I could use them. After laying a week or ten days then they would have to stand 60 or 90 days before we could move them with safety, so they would stand the jolting of a wagon.

22 X Q. So a concrete block can be laid so it will harden in three days?

A. Yes.

(By Mr. JUDSON:)

23 X Q. You stated about the artificial manufacture of blocks. How long did you attempt to make them in that way?

A. I kept to work at it until I had about 5,000 feet in the yard.

24 X Q. How long were you at it?

A. Probably 10 days.

25 X Q. Did you have much of a plant?

A. We had a lot 40 by 80, I believe, was the size of it.

26 X Q. Did you have any buildings on the lot?

A. A shed.

27 X Q. Did you have any machinery for making blocks?

A. Nothing, only the moulds that we formed the blocks in.

28 X Q. Mr. Blackburn testified the other day; you know him?

A. Yes, sir.

29 X Q. He makes tiles?

A. Yes, sir.

30 X Q. Artificial?

A. Yes, sir.

31 X Q. He is doing business all the time in the city now?

A. I think so, as far as I know.

32 X Q. You said you didn't think it practicable to make large blocks; how about small blocks?

A. Small blocks, of course, you can make much easier than large ones; they are not so thick and not so hard to handle.

33 X Q. The question, then, turns on the difficulty of handling them?

A. Yes, sir.

312 34 X Q. Did you ever handle natural stone?

A. Not very much.

35 X Q. That is a- liable to break when moved about, too, is it not—flagstone?

A. Yes, sir.

36 X Q. That is one of the chances of the business?

A. Yes, sir.

37 X Q. Against which you have to guard by careful handling?

A. Yes, sir.

38 X Q. Now, when you gave an opinion that it would take 40 cents to make an artificial pavement do you mean that to apply to all sizes of blocks?

A. The large blocks.

39 X Q. You mean to small blocks?

A. No, no; just to the large blocks.

40 X Q. It don't cost Mr. Blackburn 40 cents to make his?

A. No; and it don't cost me that either.

41 X Q. What does it cost Mr. Blackburn to lay his?

A. He claims to get 35 cents a foot. What he tells me.

42 X Q. What does it cost him to make them?

A. I don't know.

43 X Q. Do you know how much it costs to lay the natural flagstone?

A. No, sir; I never laid any.

44 X Q. Do you know how much it would cost to handle the natural stone?

A. No, sir.

Examined by Mr. BLAIR:

45 Q. Mr. Shannon, referring to the method of laying stone in alternate blocks or laying concrete pavement while plastic in alternate blocks, I will ask you to give your estimate as to the difference in cost between that method and the method of the Schillinger patent, the material being the same—the blocks.

Objected to. Objection overruled.

313 A. Well, my evidence I can't give very explicit, I think. In fact I have never made contracts in that way; but looking at it in this light—now, the majority of walks is about 12 feet by 25 feet and four men will go to work and lay that walk in a day. If we lay it in every other block I have to take my men off and I have to pay them for the day. If they work a half a day I have to pay them for the day, and moving them and all to some other walk and then moving back it would certainly cost more money; but as to figuring to cents I can't do it because I never had experience enough, but if a man had a big, long job, where he could go right along, it would be different. The majority of contracts is 12 to 25 feet wide in front of a store.

(By Mr. YOUNG:)

46 Q. The size of a lot?

A. Yes, sir.

47 Q. What effect would a fall of rain occurring in the meantime be likely to have on blocks laid while the foundation was being prepared?

A. It would — be any disadvantage to the foundation; if the block is soft it is liable to wash it down if it rains heavy on it.

48 Q. How much, in your judgment, would the difference in cost amount to?

A. Well, 25 feet of sidewalk would be somewhere from $7 to $10, I can't say, moving away and moving back.

49 Q. How many feet would that be?

A. It would be 300 feet.

(By Mr. JUDSON:)

50 Q. I understand you to say that the difference in cost—that the cost would be from $7 to $10 a foot?

A. No; $7 to $10 in a walk.

51 Q. $7 to $10 in how many?

A. 300 feet. That is a small difference in the expense of laying; it is the moving there and moving away. Suppose you have only one walk here and your men they lay half of it in half a day or a little less, you have to pay them by the day, not half a day.

52 Q. Now, what do you count the cost of laying—leaving out the cost of the material—a walk of that length; how much
314 a foot?

A. About $12 for 300 feet.

53 Q. How much a foot?

A. I have not figured it up.

54 Q. What is your estimate of that kind of pavement per square foot—the laying of the pavement?

A. It would be about four cents a foot.

55 Q. So the total expense of laying would be about $12, and you figure that $10 of that—it would cost $10 more to lay it by alternate blocks?

A. Then you have to move your tools. It would cost you to move them away something and move them back again, and if you have to pay your men for the whole day and they only put in four or five hours, why, that much is gone.

56 Q. You pay your men when they don't work as well as when they do?

A. Yes; unless they work by the day.

(By Mr. KNIGHT:)

57 Q. Supposing you commenced at noon one day and laid a block, laying in alternate blocks the whole length of the strip, and then came back next morning, couldn't you do that?

A. Yes; if it happened to come that way, but it don't always come that way.

58 Q. In that case there would not be any difference at all?

A. No; if you could work it that way.

59 Q. If the block is twice that length there is no difference, because you could go over it once one day and then over it the next?

A. That block don't set overnight so as to work the next day. You would have to leave it at least three days. If you have one block after another you have to leave it to set overnight, and you ought not to go to work sooner, because when you ram it it will interlock as before.

60 Q. Suppose you don't ram it?

A. I can't make it without ramming. I don't know how others do.

61 Q. Are you willing to testify that you can't work on it the second day?

A. Yes—oh, I might work one block after another, but if
315 I want them blocks to set I have to leave them three days at least.

Signature waived.

This closed the testimony in the case.

And afterwards, to wit, on the twenty-third day of December, A. D. 1887, there was filed in said cause exceptions to the supplemental report of the master in words and figures following, to wit:

(*Exceptions to Supplemental Report of Master.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
P. M. BRUNER, Defendant.

Exceptions taken by the said William Shannon to the supplemental report of C. H. Krum, Esq., one of the masters of the court, to whom the cause stands referred, in pursuance of the decree made on the hearing of said cause, said supplemental report having been filed in said cause on the 17th day of December, 1887.

First exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford the complainant substantial damages," and hath recommended that a decree for nominal profits only be rendered in favor of complainant, and, as supporting such a conclusion, hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such
316 other methods as being, first, a method described by respondent and by him designated as that of "alternate blocks;" and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having "apparent joints mar-ed off across the pavement after its completion."

Whereas the fact is that the testimony adduced before the master was such as to warrant him in finding substantial profits in favor of complainant, notwithstanding any and all testimony respecting other methods alleged by respondent to have been open to him.

Second exception. That the master, having adopted as a standard of comparison the method of constructing concrete pavement known in the testimony as that of alternate blocks, did thereby require complainant to answer and refute the pretenses of respondent respecting the qualities and cost of a pavement constructed according to such assumed method.

Whereas the facts are, as will appear by the testimony, that said alternate block method is not an established method, nor one ever used except experimentally by the respondent alone, and only to a limited extent, and not until after the institution of this suit, and that not a sufficient time has elapsed since respondent's experiments was made fully to test the durability of such experimental work.

Third exception. For that the master, having adopted as a standard of comparison the said method of alternate blocks as aforesaid,

and having reported such method of constructing concrete pavements to be as good as the Schillinger method, omits to qualify such conclusion by any find-s relative to the value of the extra time and labor necessarily involved in such alternate block method, thereby assuming that a pavement may be as cheaply constructed thereby as by the Schillinger method.

317 Whereas the evidence shows that the alternate block method as applicable to ordinary cases of demand for the construction of a pavement necessarily involves delays and expenses not incident to the Schillinger method.

Fourth exception. For that the master, having adopted as aforesaid as a standard of comparison the method of constructing concrete pavements by laying the blocks in immediate succession without the interposition of tar paper or its equivalent between said blocks, *and* hath certified that such a pavement so laid and having its surface divided into apparent blocks by joints marked across the pavement after its completion is equally as good as one provided with the patented improvement.

Whereas the fact is, as will appear by the testimony taken in this cause prior to the hearing, as well as that taken before the master, that such a pavement is practically a continuous pavement and is specially liable to become cracked by upheaval due to frost and is less durable and desirable than one wherein individuality of the concrete blocks is secured by the interposition of tar paper or its equivalent between such blocks.

Wherefore the said William Shannon excepts to the supplemental report of the master and hereby appeals therefrom to this honorable court and prays that the court may review said report and all the evidence taken in the cause, both that taken before the hearing as well as that taken before the master, and prays that the court may consider whether the methods of constructing concrete pavements alleged by the respondent to have been open to him are practicable ones or not; if so, whether or not they have been practiced to the extent that their cost, quality, and durability are no longer matters of experiment or surmise; if so, whether or not these facts were known to the respondent at the time he infringed com-

318 plainant's rights, and if found practicable and established and known by respondent at the time he infringed complainant's rights that the court, adopting as a standard of comparison the best of such methods so found to have been established, may determine to what extent, either in excellence or cheapness or in both respects, complainant's patented method excels in value such standard and by such measure of value to estimate and decree profits to complainant from the total profits found by the master to have been derived by respondent in the manufacture and sale of concrete pavements wherein he has infringed complainant's rights.

UPTON M. YOUNG,
ALEX. YOUNG,
ALBERT BLAIR,
For Complainant.

And afterwards, to wit, on the sixteenth day of January, A. D. 1888, there were filed in said cause amended exceptions to the supplemental report of the master in words and figures following, to wit:

(*Amended Exceptions to the Supplemental Report of the Master.*)

In the Circuit Court of the United States for the Eastern District of Missouri.

WILLIAM SHANNON, Complainant,
vs.
P. M. BRUNER, Defendant.

Amended exceptions of complainant to the supplemental report of the master.

Exceptions taken by the said William Shannon to the supplemental report of C. H. Krum, Esq., one of the masters of the court, to whom the cause stands referred, in pursuance of the decree made on the hearing of said cause, said supplemental
319 report having been filed in said cause on the 17th day of December, 1887.

First exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford the complainant substantial damages," and hath recommended that a decree for nominal profits only be rendered in favor of complainant, and, as supporting such a conclusion, hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such other methods as being, first, a method described by respondent and by him designated as that of alternate blocks, and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having "apparent joints marked off across the pavement after its completion."

Whereas the fact is that the Schillinger pavement described and claimed in the letters patent in this suit is a complete and entire invention and is in no way related to the several methods and pavements set up by respondent as standards of comparison with it, and that the master, notwithstanding all testimony as to pavements of other kinds, ought to have awarded to complainant the entire profits realized by respondent in making and selling pavements covered by said patent.

Second exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford complainant substantial damages," and hath recommended that a decree for nominal profits only be rendered in favor of complainant, and,

as supporting such a conclusion, hath found as matters of
320 fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such other methods as being, first, a method described by respondent and by him designated as that of alternate blocks, and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having "apparent joints marked off across the pavement after its completion."

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavements, the fact is that the testimony adduced before the master was such as to warrant him in finding substantial profits in favor of complainant, notwithstanding any and all testimony respecting other methods alleged by respondent to have been open to him.

Third exception. That the master, having adopted as a standard of comparison the method of constructing concrete pavement known in the testimony as that of alternate blocks, did thereby require complainant to answer and refute the pretences of respondent respecting the qualities and cost of pavement constructed according to such assumed method.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavements, the facts are, as will appear by the testimony, that said alternate block method is not an established method, nor one ever used, except experimentally, by the respondent alone, and only to a limited extent, and not until after the institution of this suit, and that not a sufficient time has elapsed since respondent's experiments were made fully to test the durability of such experimental work.

Fourth exception. For that the master, having adopted as
321 a standard of comparison the said method of alternate blocks as aforesaid, and having reported concrete pavements constructed by such method to be as good as the Schillinger pavement, omits to qualify such conclusion by any findings relative to the value of the extra time and labor necessarily involved in such alternate block method, thereby assuming that such pavement may be as cheaply constructed as may the Schillinger pavement.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with the other pavements, the evidence shows that the alternate block method, as applicable to ordinary cases of demand for the construction of a pavement, necessarily involves delays and expenses not incident to a construction of the Schillinger pavement.

Fifth exception. For that the master, having adopted as aforesaid as a standard of comparison the method of constructing concrete pavements by laying the blocks in immediate succession without the interposition of tar paper or its equivalent between said blocks, *and* hath certified that such a pavement so laid and having its sur-

face divided into apparent blocks by joints marked across the pavement after its completion is equally good as said Schillinger pavement.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavements, the fact is, as will appear by the testimony taken in this cause prior to the hearing, as well as that taken before the master, that such a pavement is practically a continuous pavement, and is specially liable to become cracked by upheaval due to frost, and is less durable and desirable than one wherein individuality of the concrete blocks is secured by the interposition of the paper or its equivalent between such blocks.

322 Wherefore the said William Shannon excepts to the supplemental report of the master and hereby appeals therefrom to this honorable court and prays that the court may consider whether said invention is not an entirety and whether it is not unrelated to any other improvement and whether the profits realized by the respondent in infringing the patent thereon are not entirely due to complainant.

But if the court should find that such is not the case, and that it was proper for the master to consider other pavements in determining the question of profits, then the complainant prays that the court may review said report and all the evidence taken in the cause, both that taken before the hearing as well as that taken before the master, and prays that the court may consider whether the methods of constructing concrete pavements alleged by the respondent to have been open to him *as* practicable ones or not; if so, whether or not they have been practiced to the extent that their cost, quality, and durability are no longer matters of experiment or surmise; if so, whether or not these facts were known to the respondent at the time he infringed complainant's rights.

And, if found practicable and established and known by respondents at the time he infringed complainant's rights, that the court, adopting as a standard of comparison the best of such methods so found to have been established, may determine to what extent, either in excellence or cheapness or in both respects, complainant's patented pavement excels in value such standard, and by such measure of value to estimate and decree profits to complainant from the total profits found by the master to have been derived by respondent in the manufacture and sale of concrete pavements wherein he has infringed complainant's rights.

And afterwards, to wit, on the twenty-fourth day of Febru-
323 ary, A. D. 1888, the following further proceedings were had and appear of record in said cause, to wit:

Final Decree.

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

This cause coming on to be heard upon the amended exceptions filed by complainant to the supplemental report of Chester H. Krum, master herein, and the same being argued by counsel and duly considered by the court, it is ordered by the court that all said exceptions be, and are hereby, overruled, and that said supplemental report of the master, and also the original report of said master herein, filed on June 27th, 1887, be, and the same are hereby, in all respects confirmed.

And it appearing to the court that by reason of the expiration of the letters patent on which this suit was brought, on July 19, 1887, after the entry of the interlocutory decree herein, the injunction therein awarded is no longer in force, it is therefore ordered, adjudged, and decreed that complainant have and recover of defendant the sum of six cents, and also his costs up to and including the entry of the interlocutory decree herein, and that defendant have and recover of complainant his costs since entry of said interlocutory decree, including costs of reference herein; and it is further ordered that the master, Chester H. Krum, be allowed the sum of three hundred ($300) dollars for his services under original reference, and one hundred ($100) dollars in full for services under supplemental reference.

(Signed) AMOS M. THAYER, *Judge.*

And afterwards, to wit, on the twenty-first day of March, A. D. 1888, the following further proceedings were had and appear
324 of record in said cause, to wit:

(*Order Allowing Appeal.*)

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

Now comes the complainant, by his solicitor, and prays an appeal from the decree rendered herein to the Supreme Court of the United States, which is allowed, conditioned, however, upon the filing by said complainant of an appeal bond in the sum of five hundred dollars, to be approved by the court.

Also comes said defendant, by his solicitor, and prays a cross-appeal from said decree to the Supreme Court of the United States, which is allowed on condition that said defendant file an appeal bond in the sum of five hundred dollars, to be approved by the court.

And afterwards, to wit, on the ninth day of May, A. D. 1889, the following further proceedings were had and appear of record in said cause, to wit:

(*Order Approving Appeal Bond.*)

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

Now comes the complainant, by his solicitors, and presents to the court his appeal bond in the sum of five hundred dollars, which is by the court approved and ordered to be filed and made part of the record herein.

And now also comes the defendant, by his solicitors, and presents his bond on cross-appeal in the sum of five hundred
325 dollars, which is by the court approved and ordered to be filed and made part of the record herein.

And thereupon it is ordered that the clerk of this court make out and certify to the Supreme Court of the United States a full and complete transcript of the record and proceedings herein.

Said appeal bonds are in words and figures following, to wit:

326 Know all men by these presents that we, William Shannon, as principal, and Alexander Young, as surety, are held and firmly bound unto Preston M. Bruner in the full and just sum of five hundred dollars, to be paid to the said Preston M. Bruner, his heirs, executors, administrators, or assigns; to which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, by these presents.

Sealed with our seals and dated this (8th) eighth day of May, in the year of our Lord one thousand eight hundred and eighty-nine.

Whereas lately, at the September term, A. D. 1887, of the circuit court of the United States for the eastern division of the eastern judicial district of Missouri, in a suit depending in said court between William Shannon, plaintiff, and Preston M. Bruner, defendant, a decreé was rendered against the said William Shannon, and the said Shannon having obtained an appeal of the said court to reverse the decree in the aforesaid suit, and a citation directed to the said Preston M. Bruner, citing and admonishing him to be and appear at a Supreme Court of the United States to be holden at Washington the second Monday of October next:

Now, the condition of the above obligation is such that if the said William Shannon shall prosecute said appeal to effect and answer all damages and costs if he fail to make good his plea, then the above obligation shall be void; else to remain in full force and virtue.

Sealed and delivered in presence of—

WILLIAM SHANNON. [SEAL.]
ALEXANDER YOUNG. [SEAL.]
—— ——. [SEAL.]

Service of citation acknowledged May 9, 1889.
F. N. JUDSON,
Solicitor of Defendant & Cross-Appellee, P. M. Bruner.

Approved by—
AMOS M. THAYER,
Dist. Judge.

[Endorsed:] No. 2650. United States circuit court, eastern division of the eastern judicial district of Missouri. William Shannon *vs.* Preston M. Bruner. Bond, $500.00. William Shannon, principal; Alexander Young, surety. Filed 9th day of May, 1889. A. P. Selby, clerk.

327 Know all men by these presents that we, Preston M. Bruner, as principal, and Frederick N. Judson, as surety, are held and firmly bound unto William Shannon in the full and just sum of five hundred dollars, to be paid to the said William Shannon, his heirs, executors, administrators, or assigns; to which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, by these presents.

Sealed with our seals and dated this (9th) ninth day of May, in the year of our Lord one thousand eight hundred and eighty-nine.

Whereas lately, at the September term, A. D. 1887, of the circuit court of the United States for the eastern division of the eastern judicial district of Missouri, in a suit depending in said court between William Shannon, plaintiff, and Preston M. Bruner, defendant, a decree was rendered against the said Preston M. Bruner, and the said Bruner having obtained an appeal of the said court to reverse the decree in the aforesaid suit, and a citation directed to the said William Shannon, citing and admonishing him to be and appear at a Supreme Court of the United States to be holden at Washington the second Monday of October next:

Now, the condition of the above obligation is such that if the said Preston M. Bruner shall prosecute said appeal to effect and answer all damages and costs if he fail to make good his plea, then the above obligation to be void; else to remain in full force and virtue.

Sealed and delivered in presence of—
PRESTON M. BRUNER. [SEAL.]
F. N. JUDSON. [SEAL.]

Approved by—
AMOS M. THAYER.

[Endorsed:] No. 2650. United States circuit court, eastern division of the eastern judicial district of Missouri. William Shannon *vs.* Preston M. Bruner. Bond, $500.00. Preston M. Bruner, principal; Frederick N. Judson, surety. Filed — day of ——, 18—. —— ——, clerk.

328 In the Circuit Court of the United States in and for the Eastern Division of the Eastern Judicial District of Missouri.

WILLIAM SHANNON
vs.
PRESTON M. BRUNER. } In Equity. No. 2650.

Opinion of the Court, May 3rd, 1887.

THAYER, *District Judge:*

This is a suit for infringement of letters patent on concrete pavements granted to John J. Schillinger July 19th, 1870, and reissued under date of May 2nd, 1871.

This patent has been several times before various Federal courts in cases of alleged infringement, and the decisions are not wholly in accord as to the scope of the invention covered by the patent. The disagreement appears to have arisen since a disclaimer was filed by the patentee in 1875, whereby he withdrew certain parts of the specifications attached to the reissued letters.

The circuit courts have very generally held the invention, since the disclaimer, to consist in dividing a concrete pavement as it is laid into blocks or sections, so that one block may be removed or repaired without injury to the rest of the pavement, the division being affected by interposing some substance between the blocks, such as tar paper or some equivalent material.

Schillinger *vs.* Gunther, 14 Blatchford, 152.
Same *vs.* Same, 17 Blatchford, 66.
California Artificial Stone Paving Company *vs.* Moliter, 7 Sawyer, 190.
Schillinger *vs.* Greenway Brewing Co., 21 Blatchford, 383.
Kuhl *vs.* Mueller, 21 Federal Reporter, 510.

329 On the other hand, the supreme court of the District of Columbia has held, in an elaborate and carefully prepared decision, that the Schillinger invention, after the disclaimer, "comprehended only a combination of strips of tar paper or its equivalent with separate concrete blocks" so as to make a tight joint, and the equivalent of tar paper was held to be "some flexible or manageable substance like tin-foil."

Schillinger *vs.* Cranford, decided July 6th, 1885, Official Gazette U. S. Patent Office, December 21st, 1886, page 1349.

Owing to the special jurisdiction in patent cases conferred on the supreme court of the District of Columbia, its decisions in such matters are entitled to great respect; but the Supreme Court of the United States in a still later case seem to have approved of the construction given to this patent by the circuit courts of the United States in the cases first above cited.

California Paving Co. *vs.* Schalicke, 119 U. S., 404.

Whilst the Supreme Court in the case last referred to does not attempt to define the nature or scope of the Schillinger invention by an independent examination of the subject, yet it refers with mani-

fest approval to the cases of "Schillinger *vs.* Gunther" (*supra*) and other kindred cases, and the question of infringement or non-infringement in the case under consideration is made to turn on the point whether there had been a complete division of the pavement into blocks in the process of laying the same, by the interposition of some separating medium, so as to permit blocks to be removed separately, and so as to control the line of fracture.

The court say "the evidence in the present case shows that the defendant during the process of making his pavement marked off its surface into squares; but the question is, whether he to any extent divided it into blocks so that the line of cracking was
330 controlled and induced to follow the joints of the divisions rather than the body of the block, and so that a block could be taken out and a new one put in its place without disturbing or injuring the adjoining block." And, inasmuch as it appeared in that case that the defendant laid his pavement in strips and then marked the same crosswise and merely on the surface with a blunt marker, without dividing the same into blocks, even in any degree, as provided for in the Schillinger patent, they held that the latter patent had not been infringed.

I regard the case of the "California Paving Company *vs.* Schalicke" as settling the construction to be given to the Schillinger patent and as adopting a construction substantially in accordance with the rulings of Judges Shipman and Blatchford in Schillinger *vs.* Gunther, 14 Blatchford, 152, and 17 Blatchford, 66. I turn, therefore, to a consideration of the alleged acts of infringement in this case.

The testimony shows beyond contradiction that the defendant for several years past has been engaged in laying concrete pavements. It is not denied that he divides his pavements into sections or blocks in the process of laying the same, and, whilst the concrete is in a plastic state, by interposing some substance such as tar paper, blue paper, sand, or thin strips of wood between the blocks.

The evidence shows that he first lays a lower course of concrete from 2½ to 4 inches in thickness; then removes the scantling forming the frame for the block, and against the edges of the concrete places paper or sand or wood to separate it from the adjoining block; then forms the adjoining block in the same manner as the first was formed, and eventually covers the lower course of concrete with an upper course of finer concrete from ½ to ¾ of an inch
331 thick, and cuts through the upper course with a trowel so as to make the joints of the upper course coincide with the joints of the lower course which are filled with the material above stated—that is to say, with paper, sand, or wood. The result of the process is a concrete pavement divided into sections, with the joints of the lower course filled with some substance, which produces a complete separation of the blocks from the base to the surface and permits them to be separately removed and to crack separately when upheaved by the frost, without necessarily injuring the adjoining blocks.

On the hearing of this case it was contended, as I understood, that the defendant only used thin wedge-shaped strips of wood to

separate the various sections of the pavement. The testimony, however, tends strongly to show that strips of wood were only used by the defendant for a brief period, and that as a general rule he has separated the blocks by the use of sand packed closely against the edges of the block whilst it is in a plastic state and before the formation of the adjoining block, or by the use of some species of paper in the place of sand, or by the use of sand and paper combined or a poor quality of concrete.

As the defendant divides a concrete pavement into blocks by the permanent interposition of sand, paper, or wood between the same, in manner last described, it is not necessary in this case to consider whether the making of a joint between the sections by a trowel, cleaver, or some sharp instrument whilst the concrete is in a plastic state (the joint being left open or unfilled) would be an infringement of the Schillinger patent.

But the process above described that has been adopted by the defendant is, in my judgment, a clear infringement of the Schillinger patent—putting that construction upon the invention which I feel bound to do under the authorities above cited.

With respect to the second defence interposed by the defendant that the Schillinger patent is void for want of utility, it will
332 suffice to say that the defence is not sustained by the proof. The fact that so many attempts have been made (as disclosed by the proofs and briefs in this case) to lay concrete pavements substantially in the mode described in the Schillinger specifications demonstrates very conclusively that the method of dividing a concrete pavement into separate sections as it is laid has substantial merit. It seems clear that the laying of the concrete pavement in sections rather than in one continuous sheet has a very material effect on the wear of the pavement—that the joints prevent the pavement from cracking to the same extent and in the manner that they would otherwise crack when upheaved by frost.

This is evidently the view entertained by men experienced in the business of laying concrete, either for pavements or floors, and there appears to be no reason to doubt the utility of the invention.

The third defence insisted upon by the defendant is that the patent is void for the want of invention in view of the older art. Numerous prior patents have been pleaded and offered in evidence in support of this defence. The patents chiefly relied upon seem to be those of F. N. Hopkins, issued in November, 1869; that of Horace P. Russ, issued March 28th, 1854, and that of W. B. Steele, issued in July, 1869.

With respect to the Russ patent it is unnecessary to do more than to call attention to the remarks of Judge Blatchford with respect to that patent in the case of Schillinger *vs.* Greenway Brewing Company, 17 Federal Reporter 244, namely, "The Russ patent shows a concrete foundation for a stone pavement without joints and having removable panels consisting of frames filled with concrete to be lifted out to give access to water pipes." Although no expert testimony was introduced by the defendant in that case to point out wherein

333 the Russ patent had a bearing upon the invention of Schillinger, yet the patent itself and the specifications were before the court, and in themselves they clearly showed the nature and extent of the Russ invention and the bearing, if any it had, on the Schillinger process. Giving the Schillinger patent the scope which has heretofore been given it and conceding that that which is claimed and covered by it is patentable, it seems obvious that it was not anticipated by the Russ patent. Neither does the Hopkins patent anticipate the Schillinger invention. The Hopkins patent was for a combination of Ritchie mineral or albertite with sand and gravel or other equivalent substances to form a conglomerate for paving or roofing material. The patent in question did not cover any particular method of laying the substance. The inventor evidently contemplated that it was to be laid in one continuous sheet or mass or that it should be molded into blocks and laid in the same manner in which brisks are ordinarily laid. The Steele patent approaches somewhat nearer to the invention claimed under the Schillinger patent, but even in the case of that patent it cannot be said that it anticipated the Schillinger invention.

Steele simply laid strips of wood diagonally across the bed or foundation prepared for the concrete and spread the concrete in one continuous mass over the strips of wood so as to imbed them therein. It does not appear, however, that he contemplated forming blocks or sections of concrete with joints extending from the foundation to the surface in the manner adopted by Schillinger.

The result of my investigation is that none of the defences interposed by the defendant have been established.

A decree will accordingly be entered in favor of the plaintiff as prayed for in the bill.

334 In the Circuit Court of the United States for the Eastern Division of the Eastern Judicial District of Missouri.

FEBRUARY 17, 1888.

WILLIAM SHANNON
vs.
PRESTON M. BRUNER. } No. 2650.

THAYER, *D. J.* (orally):

Under an order of reference requiring the master to ascertain and report the amount of the gains and profits which accrued to the defendant by reason of an infringement of complainant's patent heretofore adjudged (33 Fed. Rep., p. 290), the master has reported in favor of an allowance of merely nominal profits.

Complainant has taken five exceptions to the report, but practically there are only two grounds of objection specified in the complaint, and they may be conveniently and substantially stated as follows:

First. The patent involved is the reissued Schillinger patent, No. 4364, and "relates to a concrete pavement laid in sections, so that each section can be taken up and relaid without disturbing the adjoining sections."

The master held that for the infringement complained of the defendant was not liable to the patentee for the entire profit realized on those jobs in which the device covered by the patent had been used, but only for such portion of the profit as was clearly traceable to the use of the patented device or process.

To such ruling the complainant excepts and insists that he is entitled to the entire manufacturer's profit, which in this case amounts to over $8,000.

335 Second. He insists that if his 1st position is untenable—that is to say, if he is compelled to accept such portion of defendant's business profit as is clearly traceable to the use of the patented device—that there is evidence in the case showing what such profit was and warranting a decree for a substantial amount. The 1st exception is based simply on the case of Elizabeth *vs.* The Pavement Company (97 U. S., p. 121); the subsequent case of The Manufacturing Company *vs.* Cowan (105 U. S., p. 253) is also referred to, but that decision was predicated on a special state of facts and is irrelevant to the matter in hand.

To my mind, at least, it seems clear that this case is not controlled by the principle of the decision in Elizabeth *vs.* The Pavement Company, but by the rule announced in Mowry *vs.* Whitney (14 Wallace, p. 648), and such was also the opinion of Mr. Justice Blatchford as circuit judge in Schillinger *vs.* Gunther (15 Blatchford, p. 303). It is, perhaps, unnecessary to point out the distinction between this case and the one relied upon by the complainant, but the apparent confidence with which the case of Elizabeth *vs.* The Pavement Company is cited justifies such a course. In the latter case, as has many times been remarked, the patent involved covered a combination that was complete in itself and constituted a new pavement commonly called the Nicholson, which differed from any other then in use. As combined and arranged the Nicholson pavement was a new structure—"a new thing, like a new chemical compound." It was this new thing or pavement complete in itself which the defendant made, and he made that pavement as a complete structure. He did not embody it as an improvement in some other pavement which he was employed to construct. Under such circumstances, it followed that whatever the defendant realized above the cost of construction was a profit realized by the infringe-

336 ment. The principle that controlled the case, so far as the estimate of the profits was concerned, is the same that governs when a manufacturer makes and sells an entirely new machine, which as an entirety is protected by letters patent. In such case the profit recoverable is the difference between the cost to the manufacturer and the price realized on sale. (Walker on Patents, sections 717 and 735; Rubber Co. *vs.* Goodyear, 9 Wallace, p. 804.)

The case at bar is an essentially different case. Schillinger simply devised a new method of laying a particular kind of p-vement, to wit, concrete, which was before well known and in common use. He did not invent a new pavement. His device was, according to his own admission, an improvement on a pavement already in common use, which any one might lay, and as an invention it was not

susceptible of use and was of no value except as it was employed in the construction of concrete pavements, which it was intended to improve by rendering them more durable. The proof of these statements is found in the specifications of the Schillinger patent. The patentee says he has "invented a new and useful improvement in concrete pavements." He then proceeds to describe an invention which in this very case was held "to consist in dividing a concrete pavement as it is laid into blocks or sections so that one section may be removed or repaired without injury to the adjoining sections, the division being effected by interposing some substance such as tar paper or an equivalent between the blocks," so as to effectually separate them and at the same time produce a tight joint. (33 Fed. Rep., p. 290.)

Such being the nature of the Schillinger invention—that is to say, as it was intended to be used in the construction of an old and well-known pavement for the purpose of rendering it more serviceable than formerly—it is clear beyond question that the patentee
337 cannot recover from an infringer the business profit realized by the infringer on every pavement which has been laid according to that particular method. This is pre-eminently a case in which the profit to be recovered of the infringer must be ascertained by determining what advantage was derived from the use of complainant's method over what would have been derived by the use of some other available method. (Mowry *vs.* Whitney, 14 Wallace, p. 651, and Black *vs.* Thorne, 111 U. S., p. 122.)

In the case of Elizabeth *vs.* The Pavement Company Justice Bradley remarked as a reason for rejecting the rule in Mowry *vs.* Whitney, which has been invoked, that the case then under consideration was "not the case of a profit derived from the construction of an old pavement, together with a superadded profit derived from adding an improvement made thereto by Nicholson," thereby clearly recognizing the rule of Mowry *vs.* Whitney as applicable to a case like the one at bar, for, beyond all question, the defendant in this case has done no more than to construct an old pavement with an added improvement suggested by Schillinger. He is chargeable therefore with profits only to the extent that he derived some special advantage from the use of the improved method over what would have been derived by adopting some other available method, and in so ruling and in rejecting complainant's claim to the entire profit on all jobs in which an infringement was shown the master committed no error.

The next question to be considered is whether the evidence before the master showed that any such advantage or gain had been derived from the use of the complainant's invention, and whether the evidence furnished any data for an approximately correct estimate of such gain.

This question is not embarrassed by any consideration of the question upon which party rested the burden of proof, for the master's ruling on that point has not been excepted to and
338 cannot be reviewed.

It appears from the evidence in the case that in making con-

tracts for the laying of pavements the defendant was not required or even asked by his customers to lay them according to the Schillinger method or even to divide a pavement into sections. He usually contracted to lay a concrete pavement of certain dimensions, and made a practice of giving a guarantee to his customer with reference to the quality and durability of the pavement to be laid; thereafter he selected such method of doing the work as he deemed advisable. It is manifest that the use of the Schillinger invention by the defendant was not made necessary by a public demand for a pavement laid according to that patent. When defendant made use of the invention it was his voluntary act, not enforced by any public demand, and if he derived any special advantage therefrom it is obvious from the testimony that that advantage consisted not in securing more work or in lessening materially the cost of construction, but in being able to lay a more perfect and durable pavement than could be produced by other available methods, thereby avoiding the expense of making repairs which might otherwise be required of him under the terms of his guaranty.

It appears from the evidence before the master that the division of concrete pavements into sections or blocks not exceeding ten or twelve feet square adds greatly to the utility and wear of such pavements. So essential it it now deemed to make such divisions into blocks that pavements are rarely laid in a different manner. Schillinger's patent contemplated such division into sections, and in that feature consisted in part at least the utility of the invention. It was shown, however, before the master that there were other feasable methods not covered by the Schillinger patent by which a
339 concrete pavement could be laid in sections. I shall only mention one of such other methods which appears to me from the evidence to have been well known at the time of the infringement and to have been open to use, by means of which a concrete pavement could have been as cheaply laid as by the Schillinger process. I refer to the method practiced by the defendant since the interlocutory decree in this case, of laying one block, and after the concrete has partially set removing the scantling that forms one side of the frame of the block, and laying the next block immediately against that, and so on successively without introducing any separating medium between the blocks as in the Schillinger process. This method of laying a pavement is not an infringement of complainant's patent, and, according to the concurrent testimony of all the witnesses, the process last described separates the pavement into blocks or sections.

The testimony in the case convinces me that plastic concrete laid against an adjoining block when it is only partially set and after the frame has been removed does not unite with it so as to form practically one block. The weight of testimony is that the second one laid does not adhere to the first; that the blocks are divided when fully set by a sensible space, which is sufficient at least to interrupt the line of fracture if either block is cracked from any cause.

Schillinger himself concedes in his specifications that one block

laid in immediate contact with an adjoining block which is partially set will not adhere to it in consequence of shrinkage.

Such being the state of the case, the ultimate question before the master was whether the joint formed by the Schillinger method—that is to say, by introducing some substance like tar paper or its equivalent between the blocks—was better than a joint
340 formed as last described, without any separating medium and by a process which the defendant was free to adopt and since the decree has adopted.

It might be suggested that the Schillinger method forms a tight joint and keeps out the water, whilst the other joint does not. Again, it might be suggested that the Schillinger method permits the blocks to move more freely, and that the separation is more perfect, and that less injury is liable to be done to the adjoining blocks by settlement, upheaval, or fracture of any of the blocks. These are possible advantages of the Schillinger method of forming a joint which may have induced the defendant to adopt that method in lieu of others that were open to him.

I have carefully examined all the testimony, however, and I have failed to find anything to warrant me in saying that they are positive advantages by which the defendant realized a substantial profit; much less have I been able to find any testimony to enable me to make a definite estimate of the amount of such profit.

The result is, in view of the foregoing considerations, that the exceptions to the report must be overruled and the report confirmed. It is so ordered.

341 And afterwards, to wit, on the fourteenth day of September, A. D. 1889, the following further proceedings were had and appear of record in said cause, to wit:

WILLIAM SHANNON, Complainant,
vs.
PRESTON M. BRUNER, Defendant. } 2650.

By consent of the parties hereto it is ordered that the clerk of this court transmit, under seal, to the Supreme Court of the United States the original paper exhibits filed in this cause, the same to accompany the transcript of the record on appeal to said Supreme Court, and to be used on the final hearing therein.

342 UNITED STATES OF AMERICA,
Eastern Division of the Eastern Judicial District of Missouri, } *ss:*

I, A. P. Selby, clerk of the circuit court of the United States in and for the eastern division of the eastern judicial district of Missouri, do hereby certify the writing hereto attached to be a true transcript of the record, pleadings, and proceedings in case No. 2650, of William Shannon, complainant, against Preston M. Bruner, defendant, as fully as the same remain on file and of record in said case in my office.

Seal of the United States Circuit Court, Eastern Division of the Eastern Judicial District of Missouri.

In witness whereof I hereunto subscribe my name and affix the seal of said court, at office, in the city of St. Louis, in the eastern division of said district, this seventh day of June, in the year of our Lord eighteen hundred and eighty-nine.

A. P. SELBY,
Clerk of said Court.

343 The Supreme Court of the United States.

WILLIAM SHANNON (Complainant), Appellant,
vs.
PRESTON M. BRUNER (Defendant), Appellee. } No. 425.

Assignment of Errors.

Afterwards, at the October term for the year 1889 of the Supreme Court of the United States, at the Capitol, in the city of Washington and District of Columbia, comes the said William Shannon, by Upton M. Young, Alexander Young, and Albert Blair, his attorneys, and says that in the record and proceedings in the above-entitled matter there is manifest error in this, to wit:

I.

The court erred in overruling appellant's exceptions to the master's supplemental report, filed on the 17th of December, 1887; which exceptions are in the following words:

Exceptions taken by the said William Shannon to the supplemental report of C. H. Krum, Esq., one of the masters of the court, to whom the cause stands referred, in pursuance of the decree made on the hearing of said cause, said supplemental report having been filed in said cause on the 17th day of December, 1887.

First exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford the complainant substantial damages," and hath recommended
344 that a decree for nominal profits only be rendered in favor of complainant, and as supporting such a conclusion hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such other methods as being, first, a method described by respondent and by him designated as that of "alternate blocks;" and, second, a method whereby the blocks are laid in immediate succession, without any foreign substance interposed between blocks to produce separation, but having "apparent joints marged off across the pavement after its completion."

Whereas the fact is that the testimony adduced before the master was such as to warrant him in finding substantial profits in favor

of complainant, notwithstanding any and all testimony respecting other methods alleged by respondent to have been open to him.

Second exception. That the master, having adopted as a standard of comparison the method of constructing concrete pavement known in the testimony as that of alternate blocks, did thereby require complainant to answer and refute the pretenses of respondent respecting the qualities and cost of a pavement constructed according to such assumed method.

Whereas the facts are, as will appear by the testimony, that said alternate blocks method is not an established method, nor one ever used except experimentally—by the respondent alone—and only to a limited extent and not until after the institution of this suit, and that not a sufficient time has elapsed since respondent's experiments was made fully to test the durability of such experimental work.

345 Third exception. For that the master, having adopted as a standard of comparison the said method of alternate blocks as aforesaid, and having reported such method of constructing concrete pavements to be as good as the Schillinger method, omits to qualify such conclusion by any findings relative to the value of the extra time and labor necessarily involved in such alternate block method, thereby assuming that a pavement may be as cheaply constructed thereby as by the Schillinger method.

Whereas the evidence shows that the alternate block method, as applicable to ordinary cases of demand for the construction of a pavement, necessarily involves delays and expenses not incident to the Schillinger method.

Fourth exception. For that the master, having adopted as aforesaid as a standard of comparison the method of constructing concrete pavements by laying the blocks in immediate succession without the interposition of tar paper or its equivalent between said blocks, *and* hath certified that such a pavement so laid and having its surface divided into apparent blocks by joints marked across the pavement after its completion is equally as good as one provided with the patented improvement.

Whereas the fact is, as will appear by the testimony taken in this cause prior to the hearing as well as that taken before the master, that such a pavement is practically a continuous pavement, and is specially liable to become cracked by upheaval due to frost, and is less durable and desirable than one wherein individuality of the concrete blocks is secured by the interposition of tar paper or its equivalent between such blocks.

Wherefore the said William Shannon excepts to the sup-
346 plemental report of the master, and hereby appeals therefrom to this honorable court and prays that the court may review said report and all the evidence taken in the cause, both that taken before the hearing as well as that taken before the master, and prays that the court may consider whether the methods of constructing concrete pavements alleged by the respondent to have been open to him are practicable ones or not; if so, whether or not they have been practiced to the extent that their cost, quality, and dura-

bility are no longer matters of experiment or surmise; if so, whether or not these facts were known to the respondent at the time he infringed complainant's rights; and, if found practicable and established and known by respondent at the time he infringed complainant's rights, *and* that the court, adopting as a standard of comparison the best of such methods so found to have been established, may determine to what extent, either in excellence or cheapness or in both respects, complainant's patented method excels in value such standard, and by such measure of value to estimate and decree profits to complainant from the total profits found by the master to have been derived by respondent in the manufacture and sale of concrete pavements wherein he has infringed complainant's rights.

II.

The court erred in overruling (and in not sustaining) the above and foregoing exceptions to the master's supplemental report; which report is in the following words:

"*Report of Master.*

To the honorable the judge of said court:

When this case was heard by me originally the complain-
347 ant apparently proceeded upon the theory that the entire profit realized by the respondent from laying a pavement under the Schillinger process should be assessed against him as damages. I then was of the opinion that such a rule of damages was improper. I am still of the same opinion. Certain questions were asked, to which I sustained objections. My ruling in that regard was not approved by the court. The case was sent back to me for farther proceedings. In sending back the case the court said I ought not to have returned the report witnout some element of profits or damages.

Accordingly the case has been further heard. I have admitted all the evidence offered. I have allowed the complainant the utmost latitude. He has, however, renewed none of the questions which were excluded upon the former hearings. He has proceeded at the later hearings on the theory that a pavement laid on the plan of Schillinger will not crack, but that one laid upon another plan will crack, and that as a cracked pavement is worth less than a perfect one the difference in value per foot, as applied to all of the pavement laid by the respondent down to the wime of the injunction—some seventy-five thousand feet—is the true criterion of damage.

I do not understand the court to require me to find, in any event, that the respondent has realized a profit from the use of the patent owned by the complainant. I have, however, carefully reviewed the evidence to see, if possible, where the respondent has realized profits attributable to his use of the patent, but I have been unable to arrive at a conclusion which will afford the complainant substantial damages.

348 To insert tar paper between blocks of concrete in the course of their manufacture is merely to create a joint. The joint

can be made, according to the evidence before me, by omitting the tar paper. How the pavement is to be constructed does not seem to enter into the consideration of owners who contract for the pavement. They contract for a concrete pavement. The contractor guarantees to lay one which will not crack. Prior to the injunction the respondent had open to him and he might have used any of the methods other than the Schillinger method which the evidence shows were open to use. He might have laid the pavement in alternate blocks. He might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion. In either way he would have produced a pavement with joints, which, as far as I can see from the evidence, would have been as good as that produced under the patent, at least as far as concerns the element of joints. I do not understand that the insertion of tar paper or other substance in the joints of the pavement alone gives such pavement its value or usefulness. No one, in the light of the evidence before me, can reach such a result. It is not such an advantage over other methods open to the respondent as ought to give to the complainant the right to recover the profits of laying the entire pavement. Therefore the measure of recovery must be limited to the benefits which the respondent enjoyed from the use of the patented improvement. No license fee has been shown by which a rule of recovery might have been secured. No contract with special reference to the use of the improvement has been shown to have been made by the respondent with any customer. The use of the pavement is not shown to have been limited to any particular locality. Its use was and is general and is
349 confined to no exceptional district. With the improvement the pavement costs neither more nor less than it does without such improvement; at least the difference is not appreciable.

In the light of these features of the case I cannot reach the conclusion that ground has been afforded me for recommending an award of substantial damages. Hence, I recommend that the complainant be adjudged nominal damages and no more.

All of the evidence which the parties, under the eidest possible latitude afforded them, have seen fit to introduce is now before the court, and if my conclusion is erroneous it can easily be corrected.

Respectfully submitted.

CHESTER H. KRUM, *Master.*"

Wherefore the said William Shannon prays that the decree of the circuit court for the eastern division of the eastern district of Missouri may be reversed, and that a decree for the appellant may be entered in this court.

UPTON M. YOUNG,
ALEXANDER YOUNG,
ALBERT BLAIR,
Attorneys for Appellant.

350 [Endorsed:] No. 425. The Supreme Court of the United States, Oct. term, 1891. William Shannon (complainant), appellant, *vs.* Preston M. Bruner (defendant), appellee. Assignment of errors.

[Stamped:] Office Supreme Court U. S. Filed Sep. 26, 1891. James H. McKenney, clerk.

Endorsed on cover: Case Nos. 13,647, 13,648. E. Missouri C. C. U. S. No. 425. William Shannon, appellant, *vs.* Preston M. Bruner. No. 426. Preston M. Bruner, appellant, *vs.* William Shannon. Filed September 23, 1889.

UNITED STATES SUPREME COURT.

PRESTON M. BRUNER, Appellant,
vs.
WILLIAM SHANNON, Appellee. } No. 97.

Stipulation.

It is stipulated and agreed by the parties hereto that the clerk of this court may print, as an appendix to the record, the Schillinger patent in suit, No. 105,599, and its reissue, No. 4364, and the alleged anticipatory patents of Russ, reissue No. 261; Hopkins, No. 97088, and Steel, No. 92390, and that the clerk need not print the other alleged anticipatory patents offered by the defendant in the court below.

UPTON M. YOUNG,
By ALBERT BLAIR,
Att'y Appellee.
F. N. JUDSON,
GEO. H. KNIGHT,
For Appellant.

St. Louis, Mo., Nov. 4th, 1892.

[Endorsed:] Case No. 13,648. Supreme Court U. S. October term, 1892. Term No., 97. Preston M. Bruner, app't, *vs.* William Shannon. Stipulation to print certain exhibits. Filed Nov. 7, 1892.

(2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted John J. Schillinger July 19th, 1870, No. 105,599, for improvement in concrete pavement.

In testimony whereof I, W. H. Doolittle, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twelfth day of December, in the year of our Lord one thousand eight hundred and seventy-nine, and of the Independence of the United States the one hundred and fourth.

Seal Patent Office, United States of America.

W. H. DOOLITTLE,
Acting Commissioner.

(2-155.)

No. 105,599.

THE UNITED STATES OF AMERICA.

[Vignette.]

To all to whom these letters patent shall come:

Whereas John J. Schillinger, of New York, New York, has alleged that he has invented a new and useful improvement in concrete pavements and has made oath that he is a citizen of the United States; that he verily believes he is the original and first inventor or discoverer of the said improvement, and that the same hath not to his knowledge and belief been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars and presented a petition to the Commissioner of Patents praying that a patent may be issued therefor—

These are therefore to grant to the said John J. Schillinger, his executors, administrators, or assigns, for the term of seventeen years from the nineteenth day of July, one thousand eight hundred and seventy, the full and exclusive right and liberty of making, using, and vending to others to be used the said improvement, a description whereof is given in the annexed schedule and made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office to be hereunto affixed.

Seal Patent Office, United States of America.

Given under my hand at the city of Washington this nineteenth day of July, in the year of our Lord one thousand eight hundred and seventy, and of the Independence of the United States of America the ninety-fifth.

W. T. OTTO,
Acting Secretary of the Interior.
SAM'L S. FISHER,
Commissioner of Patents.

Countersigned and sealed with the seal of the Patent Office.

John J. Schillinger's Imp.d Pavement.

105599

PATENTED JUL 19 1870

Fig: 1.

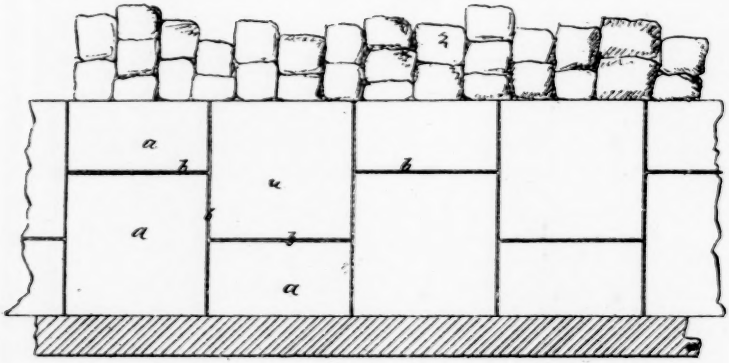
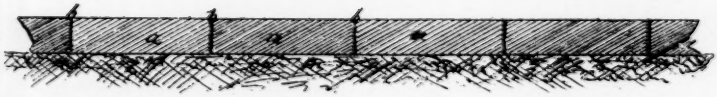


Fig: 2.



No. 97
Runner
v.
Shannon
} p. 5.

Witnesses:
C. Wahlers
Rud Sauzmeister

Inventor.
John J. Schillinger.
by his Att'ys Howard & Howard

105,599.

UNITED STATES PATENT OFFICE.

JOHN J. SCHILLINGER, of New York, N. Y.

Improvement in Concrete Pavements.

Specification forming part of Letters Patent No. 105,599, dated July 19, 1870.

To all whom it may concern :

Be it known that I, John J. Schillinger, of the city, county, and State of New York, have invented a new and useful improvement in concrete pavements; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

(Here follows diagram marked p. 5.)

Figure 1 represents my pavement in plan view. Fig. 2 is a vertical section of the pavement.

This invention relates to pavements for sidewalks and other purposes; and consists in combining, with the joints of concrete pavements, strips of tar, paper, or equivalent material, arranged between the several blocks in such a manner as to produce a suitable tight joint, and yet allow the blocks to be raised separately, without affecting or injuring the blocks adjacent thereto.

In carrying out my invention I form the concrete by mixing cement with sand and gravel, or other suitable materials, to form a suitable plastic composition, using about the following proportions : One part, by measure, of cement; one part, by measure, of sand ; and from three to six parts, by measure, of gravel ; using sufficient water to make the mixture plastic ; but I do not confine myself to any proportions for making the concrete composition. While the mass is plastic I lay or spread the same upon the foundation or bed of the pavement, either in molds or between movable joists, of the proper thickness, so as to form the edges of the concrete blocks *a a*, &c. When the block *a* has been formed, I take strips of tar paper, *b*, of a width equal or almost equal to the height of the block, and place them up against the edges of the block in such a manner that they form the joints between such block and the adjacent blocks. After completing one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint, and proceed with the formation of the new block until it is completed. In this manner I proceed in making all the blocks until the pavement is completed, interposing tar-paper between their several joints, as

described. The paper constitutes a tight water-proof joint, but it allows the several blocks to heave separately, from the effects of frost, or to be raised or removed separately, whenever occasion may arise, without injury to the adjacent blocks. The paper does not adhere, when placed against the edge of the fully-formed block, and, therefore, the joints are always free between the several blocks, although adherence may take place between the paper and the plastic edges of the blocks which are formed after the paper joints are set up in place.

What I claim as new, and desire to secure by letters patent, is—

The arrangement of tar-paper or its equivalent, between adjoining blocks of concrete, substantially as and for the purpose described.

This specification signed by me this 15th day of June, 1870.

JOHN J. SCHILLINGER.

Witnesses:
W. HAUFF.
C. WAHLERS.

[Endorsed:] 2650. Exhibit B. No. 1733. Filed Sept. 6, 1880. M. M. Price, cl'k. Filed April 15, '87. A. P. Selby, cl'k.

(2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissue letters patent granted John J. Schillinger May 2, 1871, No. 4364, for improvement in concrete pavements.

In testimony whereof I, W. H. Doolittle, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twelfth day of December, in the year of our Lord one thousand eight hundred and seventy-nine, and of the Independence of the United States the one hundred and fourth.

Seal Patent Office, United States of America.

W. H. DOOLITTLE,
Acting Commissioner.

(2–155.)

Reissue No. 4364.

THE UNITED STATES OF AMERICA.

[Vignette.]

To all to whom these letters patent shall come:

Whereas John J. Schillinger, of New York, New York, has alleged that he has invented a new and useful improvement in con-

crete pavements for which letters patent were issued to him dated July 19, 1870, which letters having been surrendered, the same have been canceled and new letters ordered to issue to him on an amended specification), and has made oath that he is a citizen of the United States; that he verily believes he is the original and first inventor or discoverer of the said improvement, and that the same hath not to his knowledge and belief been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars and presented a petition to the Commissioner of Patents praying that a patent may be issued therefor—

These are therefore to grant to the said John J. Schillinger, his executors, administrators, or assigns, for the term of seventeen years from the nineteenth day of July, one thousand eight hundred and seventy, the full and exclusive right and liberty of making, using, and vending to others to be used the said improvement, a description whereof is given in the annexed schedule and made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office to be hereunto affixed.

Seal Patent Office, United States of America.

Given under my hand at the city of Washington this second day of May, in the year of our Lord one thousand eight hund- and seventy-one, and of the Independence of the United States of America the ninety-fifth.

C. DELANO,
Secretary of the Interior.
M. D. LEGGETT,
Commissioner of Patents.

Countersigned and sealed with the seal of the Patent Office.

4364.

UNITED STATES PATENT OFFICE.

JOHN J. SCHILLINGER, of New York, N. Y.

Improvement in Concrete Pavements.

Specification forming part of Letters Patent No. 105,599, dated July 19, 1870; Reissue No. 4364, dated May 2, 1871.

To all whom it may concern:

Be it known that I, John J. Schillinger, of the city, county, and State of New York, have invented a new and useful improvement in concrete pavements; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

(Here follows diagram marked p. 10.)

Figure 1 represents a plan of my pavement. Fig. 2 is a vertical section of the same.

Similar letters indicate corresponding parts.

This invention relates to a concrete pavement which is laid in sections, so that each section can be taken up and relaid without disturbing the adjoining sections. With the joints of this sectional concrete pavement are combined strips of tar-paper or equivalent material arranged between the several blocks or sections in such a manner as to produce a suitable tight joint and yet allow the blocks to be raised separately without affecting the blocks adjacent thereto.

In carrying out my invention I form the concrete by mixing cement with sand and gravel or other suitable material to form a plastic compound, using about the following proportions: One part, by measure, of cement; one part, by measure, of sand, and from three to six parts by measure of gravel, with sufficient water to render the mixture plastic; but I do not confine myself to any definite proportions or materials for making the concrete composition. While the mass is plastic I lay or spread the same on the foundation or bed of the pavement, either in molds or between movable joists of the proper thickness, so as to form the edges of the concrete blocks *a a*, one block being formed after the other. When the first block has set I remove the joists or partitions between it and the block next to be formed, and then I form the second block, and so on, each succeeding block being formed after the adjacent blocks have set; and since the concrete in setting shrinks, the second block when set does not adhere to the first, and so on; and when the pavement is completed each block can be taken up independent of the adjoining blocks. Between the joints of the adjacent blocks are placed strips *b*, of tar-paper or other suitable material, in the following manner:

JOHN J. SCHILLINGER.

Improvement in Concrete-Pavements.

No. 4,364.

Reissued May 2, 1871.

Fig. 1.

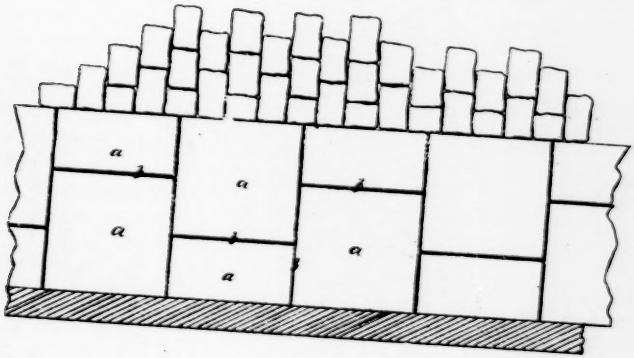
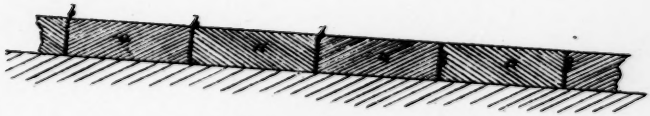


Fig. 2.



No. 97
Bruner
&
Shannon
} p. 10

Witnesses:
E. F. Kastenhuber
C. Wahlers.

Inventor.
John J. Schillinger

After completing one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint, and proceed with the formation of the new block until it is completed. In this manner I proceed until the pavement is completed, interposing tar-paper between the several joints, as described. The paper constitutes a tight water-proof joint, but it allows the several blocks to heave separately from the effects of frost, or to be raised or removed separately, whenever occasion may arise, without injury to the adjacent blocks. The paper, when placed against the block first formed, does not adhere thereto, and therefore the joints are always free between the several blocks, although the paper may adhere to the edges of the block or blocks formed after the same has been set up in its place between the joints. In such cases, however, where cheapness is an object, the tar-paper may be omitted, and the blocks formed without interposing anything between their joints, as previously described. In this latter case the joints soon fill up with sand or dust and the pavement is rendered sufficiently tight for many purposes, while the blocks are detached from each other, and can be taken up and relaid each independent of the adjoining blocks.

What I claim as new, and desire to secure by letters patent, is—

1. A concrete pavement laid in detached blocks or sections, substantially in the manner shown and described.

2. The arrangement of tar-paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose set forth.

JOHN J. SCHILLINGER.

Witnesses:

W. HAUFF.
E. F. KASTENHUBER.

[Endorsed:] 2650. Exhibit A. Filed Sept. 6, '80. M. M. Price, cl'k. Filed April 15, '87. A. P. Selby, cl'k.

UNITED STATES PATENT OFFICE.

HORACE P. RUSS, of New York, N. Y.

Improvement in Substrata for Pavements.

Specification forming part of Letters Patent No. 5475, dated March 14, 1848; Reissue No. 261, dated March 28, 1854.

To all whom it may concern:

Be it known that I, Horace P. Russ, of the city, county, and State of New York, civil engineer, have invented and made and applied to use certain new and useful improvements in the construction and arrangement of the parts constituting the carriage-ways of streets and roads, by which, while the durability thereof is maintained and greatly increased, the means of discovering the points at which leakages occur in gas-pipes, water-pipes, &c., under the carriage-ways are fully preserved, and access can be had to sewers, water-pipes, or gas-pipes, or other needful fixtures beneath the surface and the carriage-way be replaced without injury and at little cost, for which improvements I seek letters patent of the United States; and I do hereby declare that the said improvements and the mode of arranging and constructing the same and the effects obtained thereby are fully and substantially set forth and shown in the following description and in the drawings annexed to and making part of this specification, wherein—

(Here follows diagram marked p. 12.)

Figure 1 is a plan of a street, road, or highway formed with my improvements, and showing the progressive arrangements that commence with clearing the subsoil to receive the structure and terminate with the finish of the roadway. Fig. 2 is a section of the same across the street or road. The detached figures are separately referred to, and the same letters, numbers, and other marks of reference apply to the like parts in all the figures.

A is the subsoil, cleared to the proper depth and grade to finish the work, as required. In this *a* is a sewer, and 1 is a side drain to a culvert or dwelling. *b* are water-mains, and 2 is a supply-branch from one. *c* are gas-pipes, and 3 a supply-branch. These are all to be made and placed before or after the construction of the road above in the usual way, and are only represented herein to identify them with the indications of leakage and the means of access to them, as shown hereinafter. When the subsoil is graded and ready, a quantity of granite or other masons' or quarry chips, each from four to six or eight inches in diameter and about half that thickness, are to be laid with the flatted side upward, in the manner shown by 4 4 in Fig. 1, and rammed down flush with the grading, so as to form an open heading or partial pavement foundation for the next part of the work. This is to be proceeded in as follows:

H. P. Russ.

Stone Pavement.

No. 261. Reissued Mar. 28, 1854.

Fig. 2.

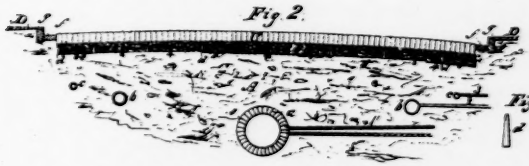


Fig. 3.

Fig. 1

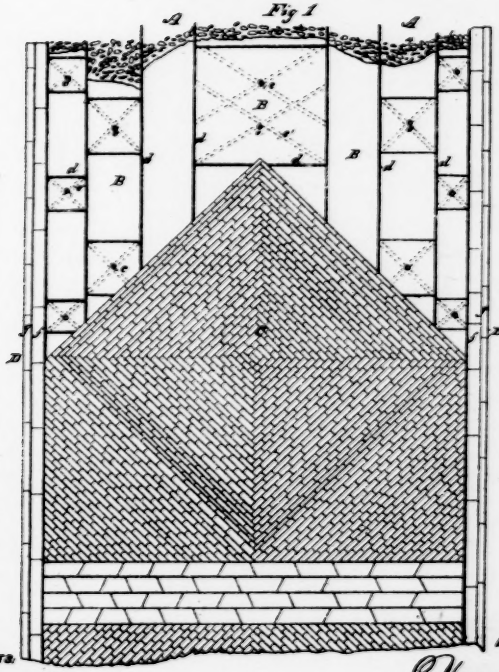


Fig. 5

Fig. 4

No. 97 Brunel & Shannon } p. 12

WITNESSES:

John W. Johnson

Wm. P. N. Gibbs Jr.

INVENTOR.

Horace P. Russ

Copy of Defendants Exhibit No. 1

Chas. E. Weller

U.S. Consul

The positions of the sewers, pipes, and branches are to be defined, and metal or wood frames, laid out in the manner shown by *d d*, thicker at the bottoms than at the tops, are to be laid down on this foundation to circumscribe a space or spaces forming a panel or panels over each sewer-pipe and branch beneath. These may be made of sound wood, though common cast-iron or iron-stone pottery, burnt earth, or any other fit material may be used for the frame-pieces in the sectional form shown in larger size in the detached Fig. 3, and placed on the graded subsoil and partial pavement. Similar strips or frames should be laid, dividing the preparatory pavement lengthwise into strips or long bats. These bats and the frames above mentioned are to be filled with what is now well known by the technical name of "concrete"—namely, a mixture of masons' chips, broken stone, hydraulic cement, clean sand, (not salt beach sand,) and fresh water—in such proportions as the quality of the cement will require to form a sound foundation, *B*, above the subsoil A, that will in a short time become an artificial flag or slab of rock about eight to ten inches thick to bear the pavement above; but before the mixture is placed into the panels or sections formed by the frames *d d* these panels that may hereafter have to be lifted out for access to the parts beneath are to have bars of iron laid into them, forming crosses *e'*, with holes in them, through which they are united by an eyebolt, *e*, with a ring in the head of each bolt, as shown in Figs. 4 and 5, and in the larger panels two or more of these sets of bars, bolts, and rings may be used, while in the smaller panels one will be sufficient. The bolts employed for these purposes may be of a small extra length that will find place in the subsoil, and a countersink in the face of the concrete is to receive the ring. In this way, on applying power to raise the panel, the ring will lift clear of the face without breakage or injury to the concrete. After the concrete is filled in and consolidated, it may be lifted out of any panel or section, as may be required, by shears or derricks placed above, with tackles hooked into the rings *e e* in the panel, the inverted wedge-formed portions of the frames *d d* allowing each panel of cement to be freely lifted out and placed on one side while access is needed to the part beneath, and receiving the panel of cement in replacement again when the access beneath is no longer needed.

It will be readily understood that if the surface of the subpavement were covered by one unbroken sheet of concrete several inches in thickness water or gas from the pipes below, in case leakage should occur, could not percolate or escape through the concrete, and therefore in such case it would escape into the ground under the roadway, impairing the foundations, and into the cellars and basements along the streets, causing much injury and annoyance, but not indicating the location of the breach, so that it would often be necessary to break up or "honeycomb" a great extent of pavement to discover it; but when the strips of wood or other substance above mentioned are laid at short intervals from each other, and the concrete poured in between them, the concrete in solidifying will shrink laterally and leave open seams through which the water or

gas can immediately rise to the surface of the roadway, thus indicating almost the precise point at which the leakage has taken place.

When the concrete dries in the panels which are intended to be lifted out, the contraction will leave openings at the edges and around the rods which connect the crosses with the rings, which will allow the escape of water or gas, and it is obvious that such round perforations at short distances from each other throughout the concrete foundation, and especially directly over the pipes, would indicate the points at which leakages occur; but it is obvious that so far as these indications are concerned these perforations operate on the same principle with the seams above mentioned, and are scarcely so effectual, but both exist in my pavement.

The great importance of the immediate penetration of the water, gas, &c., to the surface to indicate the precise location of the breach will be readily recognized, and without it the concrete foundation would scarcely be admissible in streets. The gutter-stones *f*, curb-stones *g*, and flagging of the sidewalks D may all be laid on paneled and divided sections of concrete in the same manner and with the same advantages and effects; but in the drawings the roadway only is shown thus prepared and fitted. When the concrete foundation is fully consolidated, a pavement of granite or syenite stone blocks *c*, averaging about ten to twelve inches long, four to five inches wide, and a nearly equal depth of about ten inches, is to be carefully laid to an even surface, commencing so as to form the ranges of stones into lozenge-formed divisions, as shown in Fig. 1, by which the edges are presented diagonally to the wheel-tires of carriages or to any other passing weight. The stone over the center of each section or panel is to have two countersunk holes to receive an inverted clevis, by which it may be lifted out, so as to furnish the commencement of a removal to obtain access to the panel beneath, and this stone should be only set in clean sand, and all the rest of the stones are to be covered with sand, that must be well washed into the interstices between the stones, and then consolidated by a portion of loose grouting—that is, hydraulic cement in a sufficient quantity of water to run freely into the sand and harden between the stones. The formation of the pavement in diagonal lines with the street is to be commenced and followed up by placing the first stone of each range so that the side shall form an abutment and tie for the head or fore end of the first stone in the next range, and the dimensions of the panels or sections and paving-stones may be varied as required.

I do not claim to have invented or discovered any of the materials or parts described as used herein, all being well known; but

I do claim as new and of my own invention—

1. Leaving seams or other openings in the concrete foundation, substantially in the manner described, that the direct escape of the water, gas, &c., may indicate the point or points at which repairs in the pipes are required.

2. The constructing of panels or sections in the concrete foundation B, to give access to pipes and conduits below, by the application

and combination therewith of frames *d d*, formed of any suitable material, with the thinner edge upward, to allow the concrete mass to be lifted out when necessary, substantially as described, when this is combined with a paved roadway of any kind laid thereon, as described.

In witness whereof I have hereunto set my hand.

HORACE P. RUSS.

Witnesses:
SAM'L GRUBB.
W. P. N. FITZGERALD.

[Endorsed:] Russ patent, Ex. No. 1. Filed Apr. 22, 1887. A. P. Selby, clerk.

UNITED STATES PATENT OFFICE.

FRANK N. HOPKINS, of Baltimore, Maryland.

Letters Patent No. 97088, dated November 23, 1869.

Improved Conglomerate for Paving, Roofing, and Similar Purposes.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Frank N. Hopkins, of the city and county of Baltimore, and State of Maryland, have invented a new and useful conglomerate, designed to be used for paving, roofing, and like purposes; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention consists in combining with pine-tar the substance known as Ritchie mineral, sometimes termed crystallized petroleum, and also Grahamite, and also combining with the pine-tar the substance known as Albertite, the latter being used with the Ritchie mineral, or either used separately, as desired, the two substances above named being nearly the same, or identical, as regards their constituent parts. Sand and gravel, either or both, are also used, or combined with the three first-named substances.

To enable those skilled in the art to fully understand and manufacture my improved conglomerate, I will proceed to describe the process of manufacture, and the mode of applying it, or preparing it for use.

The Ritchie mineral and Albertite are first ground or reduced, in any proper way, to a fine powder, and these substances combined, or either of them separately, are mixed with the pine-tar, all being in a cold state while being mixed, and afterward heated to about 300° Fahrenheit, so that the Ritchie mineral, or Albertite, or both, will be dissolved in the tar.

The sand and gravel, either or both, or any equivalent substance which may be used in their stead, such as crushed cinders, are

heated separately, and then mixed with the tar-solution. The object in heating the sand, gravel, or their equivalent, is to prevent the latter from cooling the tar-solution when mixed with it. All the substances above named are thoroughly mixed, and the conglomerate is then ready for use.

For paving or street-purposes, it may be spread upon the surface and rolled compactly by heavy rollers, or it may be moulded into bricks or blocks, under pressure, of any desired shape and size.

These bricks or blocks may be transported any distance to the locality where designed for use, and then be melted and spread over the surface properly prepared, or, if designed for paving or street-use, the bricks or blocks may be laid in a solid state, and cemented together by a mixture of pine-tar and Ritchie mineral, or Albertite, either or both of the latter combined, one hundred parts of pine-tar to fifty parts of the Ritchie mineral or Albertite, or fifty parts of the two last-named substances combined.

The proportions of the parts, in making the conglomerate, are, pine-tar, one hundred parts; Ritchie mineral or Albertite, separately or combined, fifty parts; sand, seven hundred parts; gravel, eleven hundred and fifty parts.

Having thus described my invention,

What I claim as new, and desire to secure by letters patent, is—

The use of pine-tar, in combination with Ritchie mineral or Albertite, either or both, and sand, gravel, or other equivalent substance, to form a conglomerate for paving, roofing, and analogous purposes, prepared in the manner substantially as herein set forth.

FRANK N. HOPKINS.

Witnesses:
GEO. A. HEMMICK.
BENTLEY S. BIBB.

Defendant's Exhibit No. 3, Chas. E. Weller, U. S. com's'r.

[Endorsed:] Hopkins patent, Ex. No. 3. Filed Apr. 22, 1887. A. P. Selby, clerk.

UNITED STATES PATENT OFFICE.

HARVEY B. STEELE, of Winchester, Connecticut.

Letters Patent No. 92390, dated July 6, 1869.

Improved Concrete Pavement.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Harvey B. Steele, of Winchester, Litchfield county, State of Connecticut, have invented a new and improved

mode of making and laying concrete pavement, for paving of streets sidewalks, or for other purposes; and I do hereby declare that the following is a full and exact description thereof.

The object of my invention is to obviate certain difficulties heretofore experienced in laying concrete pavements, some of which have been serious drawbacks to its introduction into general use, particularly for sidewalks, carriage-drives, &c., in public parks or grounds; and

It consists in the means employed to accomplish such object.

To enable others skilled in the art to construct and use my improved pavement, I will proceed to describe my method of constructing it.

I form the bed or lower strata of the pavement by excavating the earth to the depth of a foot, (more or less,) and filling the excavation, thus formed, with broken stone or coarse gravel, to the depth of about six inches.

I then place a board or plank near each edge of the walk, and running parallel with it, inclined about thirty degrees, the outer or lower edge of the board extending under and near the inside edge of the curbstone, the inner edge rising at the aforesaid angle to near the under surface of the concrete.

This board may vary in width, in proportion to the width of the curbstone, and is intended for a water-shed, to conduct off the water that may penetrate down between the concrete and the curb, and prevent it from running under and undermining the walk.

I then place diagonally across the bed of stone or gravel, above referred to, thin, narrow strips of wood, so that they will be embedded in the concrete, and which will firmly bind and prevent it from cracking, which has hitherto proved a great source of trouble in laying concrete pavements.

To the composition or concrete which I use, and which is composed of eighty parts gravel, five parts sand, five parts coal-tar or asphaltum, two parts coal-ashes, I add hydrochloric acid, in the proportions of about one ounce to a barrel of coal-tar, while in a heated state, which has the effect to deodorize it.

The composition is thoroughly mixed, and applied in a heated state to the bed, already described, to the depth (for ordinary sidewalks) of about four inches, and rolled with a heavy roller, or pounded until it is perfectly cold and solid.

I am aware that the use of gravel, sand, ashes, and coal-tar, for pavements, in various proportions, is not new, nor do I claim such ingredients of themselves; but, having thus described my invention,

What I claim, and desire to secure by letters patent, is—

1. The pavement, composed of the ingredients set forth, when prepared and laid in the manner substantially as described.

2. The binders, or diagonally-placed strips of wood, when used in

combination with a concrete pavement, in the manner and for the purpose substantially as described.

HARVEY B. STEELE.

Witnesses:

E. S. WOODFORD.
S. F. DICKERMAN.

Defendant's Exhibit No. 5, Chas. E. Weller, U. S. com's'r.

[Endorsed:] Steele patent, Ex. 5. Filed Apr. 22, 1887. A. P. Selby, clerk.

Office Supreme Court U. S.
FILED.
DEC 12 1892
JAMES H. McKENNEY,
CLERK.

IN THE

Supreme Court of the United States.

OCTOBER TERM, 1892.

WILLIAM SHANNON,
Appellant,
vs.
PRESTON M. BRUNER,
Respondent.

Term No. 96.

Appeal from the Circuit Court of the United States for the Eastern District of Missouri.

ARGUMENT IN SUPPORT OF COMPLAINANT'S AMENDED EXCEPTIONS TO SUPPLEMENTAL REPORT OF THE MASTER.

ALBERT BLAIR,
Solicitor for Appellant.

CONTINENTAL PRINTING CO., 515 N 3d Street.

IN THE

Supreme Court of the United States.

OCTOBER TERM, 1892.

WILLIAM SHANNON,
Appellant,
vs.
PRESTON M. BRUNER,
Respondent.

Term No. 96.

ARGUMENT IN SUPPORT OF COMPLAINANT'S AMENDED EXCEPTIONS TO SUPPLEMENTAL REPORT OF THE MASTER.

AS TO THE FIRST EXCEPTION.

The first exception is the important one, and if well taken, the others are unnecessary.

The contention of the first exception is that the Schillinger pavement described and claimed in the letters patent in this suit is a complete and entire invention and is in no way related to the several methods and pavements set up by respondent as

standards of comparison with it, and that the Master, notwithstanding all testimony as to pavements of other kinds, ought to have awarded to complainant the entire profits realized by respondent in making and selling pavements covered by said patent. (For copy of amended exceptions see printed record, page 216.)

A brief recital of the proceedings will show how the issue was developed:

After an interlocutory decree sustaining the validity of the Schillinger re-issued patent, the usual order for an accounting by the Master was made. The first thing that occurred at the Master's inquiry, was an offer by the defendant (see page 105) to assent to a finding that he had infringed the patent to the extent of 70,000 square feet. A little later this sum was advanced to 75,000, and the offer was accepted and fixed by stipulation.

It was afterwards found by the Master, mostly from the testimony of defendant, that defendant had realized from making and selling the 75,000 feet, the sum of $8,467.48. Up to this point no controversy arises and no exceptions taken.

But, from this time onward, the defendant contends, that the patent is for a *process* and that under a rule laid down in Mowry *v.* Whitney, (14 Wall.) he is entitled to have the value of the invention ascertained by comparison with other processes open to him, and if such other processes were equally good and satisfactory to the public, then he ought not to pay over the profit made by him in making and selling the 75,000 square feet, because such proof would clearly show that the patent had no value as such. The Master accepted

this view and permitted respondent to tell how he might have laid concrete pavements without using "the Schillinger method." In his supplemental report (page 167), the Master is of the opinion that the respondent had open to him, and he might have used, several methods other than the Schillinger method and specified such methods as follows: "He might," he says, "have laid the pavement in alternate blocks; he might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion." And concludes to the effect that there had not been adduced evidence sufficient to measure the value of the Schillinger method in comparison with the other methods.

The contention made by the exception is first, that as a matter of law the Master's procedure was wrong, the patent being for a product, and not a process, and second, that as matters of fact, his findings were wrong.

In argument before the court below, complainant contended that the Schillinger pavement was a patented *product*, an article of manufacture, explicitly claimed as a pavement, and that the entire profits should go to the complainant and that standards of comparison with other so-called methods or pavements were inapplicable, and in support of this view, cited the case of Elizabeth *v.* Nicholson Pavement Company, (97 U. S. 141) a position which has recently been affirmed by this court in Hurlbut *v.* Schillinger, (130 U. S. 456.)

If the question whether the Schillinger patent is for a process or a product is still an open one, its decision at least in this case must depend upon a careful consid-

eration of the real nature of the improvement as a physical structure, as shown by the testimony, in connection with a fair construction of the specifications and claims of the patent.

Upon this point the following disquisition is submitted:

A pavement, etymologically considered, is a *floor rammed down.* The ramming is to make it solid and smooth. In common parlance, a pavement is a track, overlaid with hard and smooth substances arranged suitably for a foot-way. Smoothness and solidity in the paving materials are necessary qualities.

The materials commonly used are stone, brick, tiles, gravel, or wooden blocks or planks. Except when these constituents are of large size and of great weight, it is necessary to make them fast in the places which they are to occupy when laid; or they will be liable, under the tread of pedestrians, to displacement. Large, flat stones, thick and heavy, will keep their places, but it is a matter of considerable nicety to arrange them evenly in succession. To level the ground, lay the large slabs closely and adjust them evenly is work of an exacting character. Besides, when large, heavy, flat stones, whether natural or artificial and suitable for paving, are hauled, unloaded, rolled or lifted into place, there is liability of nicking edges, breaking corners, if not of breaking the slabs themselves.

This difficulty may be obviated by forming slabs of artificial stone, concrete blocks, in the very places where they are to lie as constituents of the pavement. On the bed of the pavement the concrete is formed and, while in a plastic state, it is spread and fashioned into the de-

sired shape. Upon exposure to the air for a day or two, the mass becomes hard and retains the form imparted to it. The rapid hardening is due to the setting of some of the well-known cements properly intermixed in moisture with the other constituents of the concrete. In the instances described in the records of this case the ingredients were Portland cement, sand, and crushed granite, the latter being graded as coarse and fine. The spread of concrete is divided into two strata, the under one being about four inches in diameter and constituting the substantial body of the pavement, and containing the coarser particles, while the top stratum is thin, and being composed of the finer particles, is finished and smoothed to resemble artificial stone of fine quality.

A pavement constructed in this manner would be a satisfactory one, if it were not for one inherent property. Being laid and fashioned while in a plastic state, comprising successive and contiguous deposits of soft concrete and subjected to the ramming or other solidifying pressure, it becomes and remains practically a continuous layer of artificial stone.

In respect to solidity, smoothness and durability, such a continuous layer of artificial stone is at first and for a little time a good pavement, but it will not remain so. Under the influence of frost and the upheavals caused thereby, it will become cracked and seamed in numerous places and its appearance spoiled. Appearance counts for much in pavements constructed in front of people's houses, and a concrete pavement, badly cracked, is undesirable. The Schillinger pavement is a concrete pavement laid in a plastic state and conse-

quently forming a continuous one, but protected from the liability of irregular fracture. This valuable property is secured by providing at the time of its construction, at definite distances, of a few feet in extent, planes of weakened union or lines of frangibility in the body of the layer.

In the under stratum and across the bed of the pavement is interposed or inserted in the soft mass, after each definite measure of deposit, a thin strip of tar paper or equivalent extraneous substance which will in a degree weaken at that place, the union of the contiguous masses. For the sake of appearance the edge of the strip does not extend through the top of the upper stratum but there is drawn directly over the strip a slight groove through the top of the finish so that when a fracture occurs at that place in the lower stratum the top course will separate in the plane of the strip with straight and even edges.

The trowel-cut serves also to give the appearance that the pavement is composed of large, smooth, separate stone blocks. But the individuality is only apparent. The masses of concrete, successively deposited, are actually united and form a continuous layer. The proof abundantly shows that at first the sections are not separate. They are merely separable or frangible when an upheaval comes. If it never comes, the integrity of the spread is not broken. If unequal pressure is applied in a verticle plane, the physical quality peculiar to the Schillinger pavement becomes of advantage and the structure breaks on the predetermined lines, the lines of weakest resistance and the pavement is no longer a continuous layer, but becomes, in fact what

from the first it seemed to be, namely, a pavement composed of regular sections.

The interposition of the tar paper, wood, sand or other substance intended to weaken cohesion of the concrete, is not intended to aid in the construction of the pavement. It in no way assists in preparing the foundation or in mixing the mass or in the setting of the concrete. It has nothing to do with any part of the process of making a concrete pavement, except where employed, to add to the cost. But it was intended to impart and does produce a physical quality or susceptibility in a concrete pavement laid in a plastic condition and forming a continuous layer. It yields no advantage in the making and neither time, labor nor material is saved. But the gain is in the quality of the thing made. The structure so made possesses a certain susceptibility intended to save from a possible future injury, which otherwise might render it valueless or undesirable.

The following propositions of fact regarding concrete pavements laid in a plastic state, will be found to be true:

First.—Concrete pavements laid in a plastic condition in successive, contiguous spreads or deposits, and subjected to the ramming requisite to produce solidity and smoothness will constitute more or less a continuous mass.

Second.—That such a pavement, (assuming it to be of ordinary extent) will be liable to become fractured under the influence of frost, and unless there is provis-

ion made, at the time of its construction to control the fracture on predetermined lines, the fracture, when it does occur, will be irregular and spoil the appearance of the pavement, and render it undesirable.

Third.—The Schillinger pavement is provided with vertical lines of weaker resistance at predetermined places, by which the fractures are controlled and made to follow straight lines, and instead of the pavement being spoiled by irregular lines of fracture it becomes what from the first it appeared to be, viz., a concrete pavement laid in regular, individual sections.

To sustain the foregoing propositions, the following citations from the printed testimony are made:

Peter Trebel's testimony, page 19, line 29:

"Q. Now state the advantage of building it in that "way. Why do you not put the entire sidewalk down "in one continuous sheet?

"A. Well it could be done.

"Q. What would be the objection to it?

"A. It would crack; it would crack in every kind "of direction.

"Q. Crack irregularly everywhere?

"A. Yes sir. It would have to do it.

"Q. In making these division lines, you use tar "paper brown paper or sand.

"A. Yes sir. That is what I use. If you put "sand in good, it separates all right."

Defendant's Testimony—page 37, line 18:

After having explained that he has laid concrete

pavements in plastic state in small tile blocks, and that he found that they had been cracked by the frost, he says:

"So I came to the conclusion that it was simply "this: That cement work runs together so close that "the fit is perfectly tight all over, and if any cause "operates in raising any portion, instead of that portion "tipping up by itself independently, it tips all the rest "with it, and the weight of those that raise, either "breaks itself or some part of the rest."

The defendant says, page 41, line 48 and page 42, that under the ramming, the blocks interlock, the "stuff" is consolidated, and that he found yellow paper insufficient to prevent interlocking, but that a strip of wood or a strip of concrete would answer the purpose. The strip of concrete must, however, be of "poorer quality," substantially weaker than the rest of the block, "so it can crumble, if there is any occasion."

The defendant's witness, John Soell, page 52, line 1, in order to prevent cracking interposes tar paper in the lower stratum and cuts the upper stratum with the trowel.

Defendant's witness, Joseph E. Grimm, page 57, line 36 thinks, "there would be a joining between the last two blocks," even if tar paper is used. Accordingly he puts a little mortar in between the joints.

Page 61, line 32:

"Q. Then what do you put in there?

"A. Put old mortar and sand, anything at all."

Defendant's witness, S. P. McKelvey, page 65, line 17, gives his opinion as to the cracking of concrete pavements.

"A. It is due to the dampness when the ground "freezes and when it commences to thaw and bulges "up and it is almost equal to one continuous stone."

The defendant at a later date, page 96, line 22, in explaining his "discovery," says: "And that discov- "ery, I claim, was that no matter how carefully you "lay a stone pavement, the flags will not be bound to- "gether, whereas with a composition pavement, in "spite of the best care, they did so bind together."

The plaintiff's witness, Geo. A. Hymes, page 148, line 1, says, a concrete pavement laid plastic in a continuous sheet would crack "diagonally" badly, and (page 149, line 43) would not be desirable.

The plaintiff says (pp. 148, 149): In constructing concrete pavements composed of individual blocks, it is absolutely necessary, in order to avoid cracking by frost, to place some substance between adjacent blocks while they are yet in a plastic condition.

It appears from testimony on pp. 18, 80, 125, 143, 144 that the trowel cut in the upper layer, while producing an apparent division into blocks, is not controlling of the fracture, but that it is necessary to insert or interpose something, e. g. tar paper, sand or coarse concrete, in the lower stratum, in order to produce a fracture in a straight line. Properly made, the trowel cut is substantially in the same vertical plane just over the strip interposed.

From the foregoing it will be perceived that the purpose of introducing the tar-paper or other interposing strip was to produce a plane of frangibility at the place where the strip is interposed, and that, too, as a means of controlling the cracking due to upheaval or irregular settling.

The pavement so laid is the Schillinger pavement. In most respects it is like other concrete pavements laid in a plastic state and forming a continuous mass.

But it differs in one slight but important respect—it contains planes of frangibility—lines of weaker resistance, in case of vertical pressure, which control the fracture and save the pavement. Being physically different, and that difference being important, it was a new thing, a new manufacture, and because of its novelty and utility was the proper subject matter of Letters Patent.

The important question in the suit is this: What does the Schillinger re-issued patent cover? A process or a product, a way of making concrete pavements or a concrete pavement made? The court below and the Master proceeded on the theory that the patent was a process patent. This view, the complainant strenuously opposes, and contends that by the language of the specification and claims, and by its essential character and merits, the invention is a PAVEMENT and not a process for making one. Of course, there is a process necessarily involved and set forth. If the inventor wishes to patent a product he is required to specify how to make his product. But while Schillinger explicitly relates how he makes, gives his process of making a pavement, he chooses to claim only the product. It is the office of the claim in a patent to set forth definitely the thing the inventor wishes to secure as his exclusive right.

Accordingly, Schillinger on his re-issued patent, No. 4364, claims as follows:

First.—A concrete pavement laid in detached blocks

or sections, substantially in the manner shown and described.

Second.—The arrangement of tar paper or its equivalent between adjoining blocks of concrete, substantially, &c.

By effect of the disclaimer subsequently filed by Schillinger in the patent office, the first claim was somewhat restricted and has lately been construed by the Supreme Court of the U. S. (Hurlbut *v.* Schillinger, 130 U. S. 465), to cover a pavement wherein the blocks are formed by interposing some separating material between them.

The claims clearly relate to and describe, a thing, a product and not a process.

The inventor made a new kind of pavement, and had a right to claim it, and has used apt language to claim it, as a new article of manufacture. It will not do to say it is identical with the former well-known concrete pavements. It is not the same kind of pavement; it possesses a physical property which no other concrete pavement laid in a plastic state ever possessed, and that physical property, though not obvious to the eye, is a very valuable one. It has the property of saving itself from destruction by restricting fracture under vertical strain to pre-arranged lines.

The court below says Schillinger did not invent a new pavement, and in order to refute the pretense that he did, quotes language from the specifications, as if it were conclusive. The inventor begins his specification by saying he "has invented a new and useful invention in concrete pavements," and thereupon the

court understands him to say that he has invented a new way of making one or some of the well-known pavements; but fails to see another import in the language quite as rational, viz., that the inventor has added a new individual to the category of concrete pavements.

There is no other expression in the body of the specifications upon which can be based the pretense that Schillinger intended to *claim a process*, while his claims are in the plainest terms intended to cover the kind of pavement or arrangement he had invented.

The Master proceeded upon the theory that the patent was for a process, and that, following the rule in Mowry *v.* Whitney, only comparative profits should be allowed, but he does not construe the language of the claims or the specifications to support his position.

If the patent were for a product, an article of manufacture and not a process, the Master had no business to consider the alleged various other methods which the defendant might have used.

If one will only recall the purpose of the invention, that its object was to produce a concrete pavement, which at any future time, in case it should be subjected to a vertical strain, would not break in a way to become worthless, and that the object of the inventor was not to save labor, time, material, or other expense in constructing it, he will see that the improvement is not an improvement in the process of making a pavement. It costs more time, more labor and more material to make a concrete pavement with the interposed strips than one without them. The gain is not in the making

of the commodity desired, but in having a commodity of more durable quality.

In a process patent, the value of the invention is realized in the execution of the process. In a *product* patent, the value is realized after the process of making is finished, in some good quality of the thing made.

The Schillinger improvement is a concrete pavement which is desirable, solely for a certain physical susceptibility it possesses in relation to a vertical strain. Like concrete pavements laid in a plastic state, it will break under the influence of frost, but break in such a way as not to destroy its appearance, a quality essential to its value.

As further proof that the Schillinger pavement is an entirety, and not an improvement added to some other useful commodity, the following citations from the testimony are submitted:

By the testimony above cited, it was established that concrete pavements laid in a plastic state in successive deposits would form a continuous concrete layer, a pavement which would be, in all respects similar to the Schillinger pavement, but *minus* the interposing strip or trowel cut (that is to say, the means of controlling fracture), which is the valuable and distinctive feature of the Schillinger invention.

Plaintiff's witness, W. A. Borman, an architect of large experience with concrete pavements, declares, page 172, line 36, that he has never seen a continuous sidewalk that would not crack, and that he would not give more than ten cents a square foot for such a pavement. The same witness, on cross-examination (page 175, line 26) says that "the prevention of cracking" lies in making it into blocks, with joints between.

Witness, J. K. Hardy, (page 177, line 14) declares "a sidewalk laid continuous cannot be done without cracking," by which he means that such a pavement is sure in time to become cracked.

The plaintiff avers (page 187, line 18) that "a man cannot make a sidewalk without interposing something permanently between the blocks, because they will adhere and interlock and make a bad walk.

Of the same opinion is witness, John A. Blackburn, (page 190, line 40) a manufacturer of stone paving. He thinks a concrete pavement laid without joints is undesirable.

The court below in it's opinion on entering the interlocutory decree sustaining the patent, in disposing of the defense, that there was no utility in the invention, used the following language:

"The facts that so many attempts have been made "(as disclosed by the proofs and briefs in this case) "to lay concrete pavements, substantially in the mode "described on the Schillinger specifications, demon- "strates very conclusively that the method of dividing a "concrete pavement into separate sections as it is laid, "has substantial merit," and then refers to the fact that the joints prevent the cracking.

Such being the nature of the invention, according to the proofs, and Schillinger having claimed as his invention, a concrete pavement laid in a certain way, and not having claimed the process or mode of laying it, and the defendant, having voluntarily admitted to have infringed the patent to the extent of 75,000 square feet, and the Master having found from the testimony of the defendant that each square foot cost on an average in

labor and material .1833 cents, and that he received on an average the sum of 30 cents per square foot, thereby realizing a profit of .1129 cents per square foot, a total profit of $8,467.48; the plaintiff contends that the first exception to the Master's Report was well taken, that the pavement is a complete and entire invention and that the entire profits realized by the defendant should have been awarded to the plaintiff.

The court below in its opinion (p. 226), admits that the rule in Elizabeth *v.* The Pavement Co. (97 U. S.) was urged in support of the first exception, but it preferred to adopt the rule in Mowry *v.* Whitney (14 Wall.), and to permit the defendant to bring other methods of construction into comparison with the method used by Schillinger, thereby assuming that the patent in question is for a process or method.

In the case of Hurlbut *v.* Schillinger (130 U. S., 456), this court found that the entire value of the pavement as a marketable article was properly and legally attributable to the invention of Schillinger, and explicitly following the rule of Elizabeth *v.* Pavement Company, gave the entire profits to the plaintiff.

There is no pretence on the part of the defendant that of the 75,000 square feet made and sold by him, that any part contained any feature or quality not incident to the Schillinger pavement that added to the selling price or value. Nothing in style, color or constitution to make it more desirable. In the proceedings before the Master, the defendant readily admits that he has made 75,000 square feet under the patent. Upon investigation the construction of those made by him is found to involve only those necessary elements of labor

and material incident to making the Schillinger pavement.

This being so, the defendant did not ask a credit or deduction for any useful feature, commodity or improvement conjoined to the patented article to give it value. He could not have asked it for the reason that none in fact existed. If, for example, in addition to the ordinary Schillinger pavement he had ornamented the surface of the 75,000 feet with various colored designs to meet a fashionable taste at the time prevailing, and he could have shown that by reason of such ornamentation, the pavement brought a better price, he would have been entitled to a proper reduction. But no such conjoined advantage or commodity is claimed in respect to the 75,000 square feet admitted to have been made in violation of the patent.

The resource of the defendant, in order to escape a payment of profits, is to invoke the rule applicable in cases of accounting where a process patent has been infringed and to bring forward other alleged methods of construction, which he might have used, if he had wished to do so, instead of the method described in the patent. The rule so invoked is known as that of Mowry *v.* Whitney (14 Wall.), and is applicable to all cases where the profit is derived solely from a *use* of the patented process or machine, but is not applicable where the profit is devised from a *sale* of the thing patented. There are instances where the patented article may be either used or sold for a profit. For example, an infringer may merely *make* a number of corn-shellers upon which another has a patent. The maker so far has derived no profit. If he proceeds to *use* those machines

in shelling corn and they are efficient over other known methods in doing the work, the infringer may be held to account for all the advantage over such other known methods of shelling corn. If, however, he does not use the machines, but *sells* them at a profit, all the profit is due to the owner of the patent irrespective of whether the machines sold are the best corn-shellers or not. The rule of Elizabeth *v.* The Pavement Company is the one adopted. The patented article is treated as as a vendible commodity, as an article of manufacture, and the seller must account for all the profits, whether he chooses to call them manufacturer's profit or trading profits.

In this case the defendant *sold* the concrete pavement, he did not *use* it. The *use* of the pavement was made probably by other people. This rule requiring the infringer to account for the entire profits of the thing sold is the only one that can practicably be applied to vendible commodities, particularly those directly supplying comfort to men's well-being. The hat a man wears or the time-piece he carries, his dwelling house or the pavement leading thereto, are so much matters of individual taste or prejudice and their value to him so indeterminate that it is impracticable in case any such article were covered by a patent and the subject matter of an accounting, to apply the rule admitting standards of comparison. Suppose, instead of having made and sold 75,000 feet of patented pavement the defendant had made and sold 75,000 bottles of patented cough syrup, the defendant's solicitor would scarcely have gone into inquiry as to the merits or prices of the various kinds of expectorants on the market to show what the defendant might have done in that line if he had been so inclined.

When a product or new article of manufacture is invented, it is *ex. vi-termini* a distinct thing, an entirety, and generally may be easily distinguished from any and all other articles or compositions. Its elements are definitely related to each other and combine or co-act to give value to the new thing. The patents statutes give to the inventor an absolute monopoly in selling it. The only criterion of its value is the profit it will bring in the market. On the question of infringement a respondent may deny he has sold it, but once admitted that he has infringed he must account for all the profits. The rule is all or nothing.

In support of the foregoing statement as to the rule in accounting when the profit is derived from sales, the following citations are submitted:

"In an accounting for the profits of infringement, "the rule in regard to *sales* is different from that in "regard to *use*. The entire profits of the sale is given "to plaintiff when the thing sold is the patented article "and nothing else. Where the profit is made by using "a patented machine or a process, that profit is only "given which measures the advantage of the machine "or process over other known machines or process free "to all."

Robinson on Patents §§ 1138–1139.

In Burdette *v.* Estey 3 Fed. Rep. 566, the infringement consisted of introducing in organs an additional set of reeds an arrangement covered by a patent. The defendant in the accounting invoked the rule of Mowry *v.* Whitney and contended that the extra set of reeds was of no advantage to the organ. The court disapproved of the plea in the following language:

"This case is very different from Mowry *v.* Whitney. "There the patent was for a process of making wheels "which as a product were not covered by the patent.

"The fact that the defendant might have employed "a horizontal partial set to nearly or quite the same "profit does not vary the aspect of the case. * * *

"If they had employed the horizontal set instead of "it, (the patented one) they would not have trespassed "on the orator's rights but they did not take that course; "they preferred to take the orator's invention. They "are liable to account to him for what they have gained "by that taking, without reference to what they might "have gained if they had taken something else. The "Nicholson pavement was a complete thing, consisting "of a certain combination of elements. The defendant "used it as such, the whole of it."

Elizabeth *v.* Pavement Company, 97 U. S. 141.
See also Seymour *v.* McCormick, 16 How. 489.
Rubber *v.* Goodyear 9 Wall. 804.
Hurlbut *v.* Schillinger, 130 U. S. 456.

In the argument below defendant's counsel, in support of his contention that the Schillinger patent was for a process, alluded to a single expression in the caption of the printed specification—an expression inserted by the patent office and not by the patentee. But the court will look at the essential character of the invention and the claims to determine whether the patent is for a process or not.

In Elizabeth *v.* Pavement Company (*supra*) the claims were introduced as follows: "I claim as an improvement in the *art* of constructing pavements."

First—placing a continuous foundation or support, then arranging therein a series of blocks and then filling, &c.

Yet this court construed it as covering an article of manufacture—a new thing. Similarly in United Nickel Company *v.* Pendleton (15 F. R. 739) the patentee states that "my invention relates to a new and improved process in nickel-plating purposes" and proceeds in his fourth claim to claim "the electro-plating of metals with a coating of compact coherent, tenacious, flexible nickel, &c.

Yet Judge Blatchford disregards the inaptness of the wording and pronounces the claim to be distinctively for a product or article of manufacture.

AS TO THE SECOND, THIRD, FOURTH AND FIFTH EXCEPTIONS TO THE MASTER'S SUPPLEMENTAL REPORT.

(See Amended Exceptions, page 216.)

If the court shall be of the opinion that the patent covered a process, and that the infringement consisted of a use and not of a sale of the thing patented, then plaintiff contends that the standards of comparison set up by respondent are not sufficient under the testimony to justify the report of the Master and the final decree of the court.

The plaintiff urges that both by authority and upon principle, a process introduced as a standard should be an established one, one in common use, and known as a practicable method, and not one yet lying in the field of conjecture or experiment.

Upon this point,

See Walker on Patents, §§ 732 and 733;
Safety Truck Company *v.* Pa. R. R. Company, 2 F. R. 681.

It is not sufficient that a process has been suggested or even been a matter of some experimentation with promising results. It must be an established and recognized method, so that a man may be reasonably assured, either by his own experience or by the experience of others, as to the character of the results and the extent of the cost. To assert that an infringer, after several years of defiant infringement, (see page 22) may, after suit is brought, provide a standard of comparison by a single experiment, (page 196, line 30) is to disregard the spirit and implied conditions of the rule.

On this point are the following extracts, from Knox *v.* Great Western Quicksilver Mining Company:

"Assuming what is called the modified 'Green "Furnance,' the last one erected by the defendants "not to be an infringement, it is claimed that this "furnace was open to public use, and is equal to, or "better than complainant's and that the comparison for "the purpose of ascertaining the profits should have "been made with this furnace. But this furnace was "not in existence during a large portion of the time "covered by the accounting. If not an infringement, "it is the first furnace of the kind ever constructed. "It was built pending this suit long after its com-

"mencement and long after the judgment of law and "*doubtless with careful purpose, of evading com-* "*plainant's patent.* It is possible that somebody may "yet invent a furnace far superior to any now in use. "If such should be the case before this accounting is "finally settled, would it be pretended that the com- "parison would be made with such furnace, because at "the time of the infringement complained, the furnace "was not invented or patented, and was therefore open "to public use, if the defendant or others had only "known enough to make one of the kind. Such a "claim would be simply preposterous. The compari- "son must be made with machines at the time of the "infringement, both known and open to public use."

Again:

"The Luckhardt furnace is the one apparently most "confidently relied on by the defendant as being "practicable and most nearly approaching in useful- "ness those used by complainants and the defendants "erected and used for a time, one of them at its "mine, and although its testimony is to the effect that "it was a success, but of too small capacity, *the sig-* "*nificant fact that it* was torn down, and when "demolished defendant did not build another Luck- "hardt furnace of larger capacity, but did erect in its "place a Green furnace, which was afterwards followed "by another, notwithstanding the pending litigation "and the risk of being called upon to account for a "large amount of profits resulting from its use in case "of failure to defeat the pending actions." 4 B. & A., 30.

The respondent was asked to state what other meth-

ods he could have used other than the Schillinger method (as if the Schillinger patent were for a *method.*) (Page 156, line 28.) "I will get you to state, Mr. Bruner, what methods there are that you can readily mention that you could use in putting down concrete pavements without using what is known as the Schillinger method?

"A. Well, you can make blocks in some other "place and bring there, and lay them; you can make "blocks as I do now one after another without putting "between to cause separation; and you can lay alternate "*blocks and in that case you can put something between* "when you fill in the other blocks, the alternate ones "left, so there are three different ways."

Mr. Bruner "readily mentions" three different ways, for convenience, the three may be designated as follows:

The transported block method.
The immediate-contact method, and
The alternate-block method.

In his finding the Master does not refer to the first of these alleged methods, but approves of the alternate block method and refers to the immediate contact method in language implying (very properly) that it is in effect a continuous concrete pavement.

The respondent, he says, "might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion."

Let us consider each of these methods and see how well established they are and satisfactory they are, according to respondent's testimony, and first as to the

ALTERNATE BLOCK METHOD.

At page (156 line 38). Respondent relates how he makes pavements in alternate blocks.

Q. "In making alternate blocks would you allow the blocks to harden before the intermediate ones are put down?"

A. "Let them harden until they get hard, until they are thoroughly hard, which may be in a day; you can make them the second day or the third day and lay a soft plastic block against the hard one and then *interpose a piece of tar paper or wooden strip, or sand, whatever you choose.*"

The closing phrase of the respondent is very significant. In his first allusion to the alternate block method, line 35, he makes substantially the same qualification, and says "in that case you can put something between."

The witness thinking that the Schillinger patent is for a method (process) believes that if he can obtain the product (blocks with something between) in a manner different from that which Schillinger advises, he will not infringe the patent. Is not this qualifying phrase from his lips in both instances when referring to the alternate block method, a most convincing admission that he regards the interposition of "something between blocks" as a desirable, if not necessary provision in the construction of concrete pavements?

But his counsel felt constrained by a leading question to draw him out of the damaging predicament into which by inadvertent candor he had tumbled.

(Page 156 line 45): Q. "And also lay them without "interposing anything? A. Yes, sir! This job here "on 7th and Olive which I gave in as one of my in- "fringements, really was not one that was laid that "way. I made one day every other block, and the "next day I came and filled the other block in."

Carefully analizing this answer according to the context, one will conclude that only the "Yes, sir" portion refers to the question about the possibility of making an alternate block pavement without interposition of a substance, and the remainder of the reply is the statement of an instance where he laid a block according to the alternate block method, which he had previously defined. Is there anything to warrant the conclusion that, in the construction of the block at 7th and Olive, according to the alternate block method, he omitted to put something between the blocks? Are we not justified in believing from the two definitions given by the respondent, that when he speaks of the alternate method he means laying a first series of blocks in alternate places, and after the expiration of two or three days, filling in the interspaces so left with new plastic blocks, but arranging something between blocks? It is evident that he thought he could do this and avoid the Schillinger patent.

Is the alternate block method one known and in common use?

The respondent admits he has tried it only to a very limited extent, page 201, line 44.

37th cross-question: "Now I will ask you to state "to the Master, how many feet of this alternate pave-"ment you have ever put down in the city of St. Louis, "and tell me where the pavement is? A. I laid some "at Third and Washington avenue, how much I can "not tell."

"38th cross-question: About how much? A. I "cannot tell. I simply know I did it."

"39th cross-question: Twenty-five feet? A. I must

"have laid more than that. If I laid one block it "would be more than 72 (6x12)."

"40th cross-question: Did you lay as much as 72 "feet? A. On 7th and Olive the whole sidewalk."

"41st cross-question: That is all? A. No. I "laid various other places, to a smaller extent; special "parties."

"42d cross-question: During all the laying of this "75,000 feet of the infringement of the Schillinger "patent you don't remember to have laid but those "two jobs or contracts? A. Positively no.

In another place he admits that the experiment at 7th and Olive is the only one he can distinctly remember.

"Page 198, line 39, 'but at 7th and Olive is the only "one I have special memory of, because the whole "pavement was laid that way.'"

Sullivan, City Inspector of Sidewalks, witness for respondent, has never known of any other being constructed.

Page 195, line 43: "When did you see the alter- "nate blocks laid, about what date and what place? "A. I can't give you the date or place, but I remem- "ber the fact."

Q. "Give me any pavement that you saw laid, any "one. A. On Olive, between 6th and 7th, on the "north side. What amount I can't tell you Q. "What year? A. I think last year."

Page 196, line 1: "Are you certain of that? A. "No, sir, I am not certain of it. Q. Was it six "months ago? A. Yes. Q. Are you certain it "was before May? A. Yes, I think it was. Q. "Don't you know that when you inspected it, it was

"after the decree in the United States Court enjoining "him from laying this pavement? A. No, sir, I do "not. It may possibly be, too. Q. You don't pretend "to know whether it was or not? A. No, sir. Q. "Can you give me any pavement in the city of St. "Louis, or any where else, that was ever laid in alter- "nate blocks, in this or any other country? A. In "any other country? Q. Yes, in any other country. "A. No, sir. Q. That is the only one you remem- "ber to have seen? A. That is the only one.

The complainant declares that he knows of no other instance, Page 210, line 8.

Is it not pretty evident that the 7th and Olive experiment was resorted to as a subterfuge, and that, too, after the institution of this suit, so that respondent could have a 'standard' of comparison?

The expedient was less creditable than building the Luckhardt furnace which Judge Sawyer condemned as a pretence, pointing out the significant fact that the respondent did not continue using the Luckhardt furnace, although claiming it to work as satisfactorily as the patented one. If the alternate method is equally satisfactory why should the respondent say "I would give considerable to use the Russ method?" (page 138, line 26.) By the Russ method the infringer means the construction of a pavement which the court has decided to be an infringement to the Schillinger patent.

Surely the court will not find upon the testimony adduced in support of the plea, that laying blocks alternately without a substance between joints is an established method. Is there nothing in respect to the results and cost of such a plan of construction, yet remaining to be

determined by experiment? Is the court willing to adjudge that every possible physical vicissitude, condition, change, weakness, expense or objectionable incident has been developed, estimated and provided against? Nothwithsanding the respondent's belief that it is safe at the end of two or three days to fill in the interspaces, may it safely be assumed that he is not mistaken? Testimony has been taken that it will not do to lay one fresh block, even to a dry one. Will there not be greater adhesion to one only half dry?

How long does it take to dry out a block of concrete? Will not the condition of the weather and the degree of moisture of the mass prove variable co-efficients affecting the time?

These are matters of surmise incident to the new method which have not been settled by sufficient experiment. The defendant himself in another connection stated that it is not practicable sometimes to leave work partly done over until another day (page 42.)

Q. "Would it be practicable to wait until the next "day? A. Sometimes not; you sometimes want to "finish a job in one day." It is not incumbent on complainant to institute a series of experiments to refute the pretences of respondent. Respondent must show his standard to be known and in common use.

Should it be considered, however, that the alternate block method is a practicable one and that it was properly set up as a standard of comparison against the Schillinger method, (assuming the latter to be a method) is there not good reason for considering the former essentially identical with the latter, although operated in an indirect and expensive manner? On the

method theory what is the function of the tar paper or its equivalent? Simply to weaken cohesion of adjacent blocks.

To effect this purpose, the courts have held that other paper, or wood, or tin, or even a partition of coarse concrete will constitute an equivalent of tar paper.

Suppose this strip of concrete is set up in place before the other concrete is laid, will not such method of construction equally infringe the patent?

The function or value of the strips do not depend upon their width. Suppose the strips of concrete, which are to serve as interposed partitions, be broadened until they themselves become blocks of concrete of the usual size, will not they then quite effectually separate the blocks occupying the interspaces? Each interposed strip (block) now performs two functions, one to produce separation and the other to form one of the series of blocks composing the sidewalk.

THE TRANSPORTED BLOCK METHOD.

The Master makes no allusion to this method, and consequently it is not clear whether he considers the plea made out or not.

The complainant admits that construction of pavement composed of hard tiles is an established method. Hard tiles are concrete blocks square or hexagonal, containing about 160 or 200 square inches, and are one or two inches thick. They are moulded at the factory, transported to the place required and laid as brick are laid.

The testimony of respondent is that pavements composed of such tiling are inferior to his granitoid pavement where the blocks are much thicker and larger. At page 36, line 20, he relates his experience with hard tiling: "We couldn't make them stay fast. Then our hopes were all overthrown" (page 37, line 47). "Then I came to the conclusion that the only way to lay a pavement would be to lay them in large blocks that would lay in place by their own (weight," page 38, line 8.) "Now I could see by making larger stones they would keep in place by their own weight, by making them sufficiently strong." (Page 41, line 15.)

Q. "Were these tiles put down in a plastic or solidified condition?" A. "They were, as stated in the beginning, put in iron molds and then put away to harden, and after they were hard like stone, they were laid as stone or marble tiles are laid. We called them tile because floor stones are called tile, and they have a very similar shape; they are square pieces about the same size, but very few stone tiles are as large as we make the cement."

McKelvey's testimony (page 65, line 19): "I will further state that in my experience as superintendent of the St. Louis Flag Stone Co., we have been called upon occasionally to remove a cement pavement of Schillinger's patent and of others, and we find where they are laid in a little tile of thirteen inches to twelve inches and two feet square, that in taking them up sometimes eight feet or ten feet of them will all come up together, and then, being thin, not to exceed an inch and one-half, some of them an inch, and none of them over two inches, it is impossible for them to stand the action of the heaving caused by the frost."

The testimony is that respondent makes his granitoid blocks about four inches thick and six by ten or six by twelve feet in length and breadth. (Page 49, line 12.) The respondent does not set up as a standard a pavement composed of the small tile such as are described above. The transported block method averred by the respondent as practicable and as being as cheap and satisfactory as the patented one, contemplates blocks of the size and thickness of those which the respondent made in constructing his granitoid pavement, blocks six feet wide by ten or twelve feet long and four inches thick. As in the alternate block method, the experience of the respondent in this way of constructing a pavement is equally recent and rather more limited. As with reference to that method, so with this, we obtain about all that is known upon the subject from the defendant and his partner, Mr. McKelvey.

The defendant (page 157, line 31) said, referring to the suggestion that the blocks be made elsewhere:

"I have done very little; it is considerable of a guess, "merely an estimate. I have made some blocks on pur- "pose, as an experiment, and I have allowed my part- "ner, Mr. McKelvey, who is in the stone business, to lay "them for me, to see particularly how it would work."

"The expense of laying them I do not know. He will certify as to that; from practice I don't know it."

And in another place he tells of two large blocks he placed in front of the Exposition building, as an advertisement, but admits that they were provided with an iron rod to give them strength.

Page 205, line 2: "But I have made the large "blocks and Mr. McKelvey, who has testified in this

"case before, has laid them. Q. Have you ever laid "any? A. Yes, I have laid a few blocks. Q. When "was that? A. Well, I laid a couple this summer. "Q. That is since this suit began was it not? A. "Yes, it must have been. A couple I laid last fall as "an experiment."

The following is what Mr. McKelvey has to say on the subject: (Page 160, line 33.) "I wish to ask "you, as an expert in your line of business, whether— "I will ask you first whether you have seen paving "blocks made of concrete? A. Oh! yes, sir, we have. "I laid some that Mr. Bruner made, P. M. Bruner & "Company, just a few of them. I wanted Mr. Bruner "to adopt that course, to a considerable extent, manu- "facturing the stone in the blocks similar to those we "have sawed or plained, and lay a sidewalk that way. "Q. That is making the stone in blocks at your place of "business? A. Make them any time and have them "on hand. But he being manager of the business he "did not seem to agree to it from the fact that he said "that it was a new line of business in laying sidewalk "which he is perfectly right about, and it would take "us a year or such a matter, to get men trained to lay "them expeditiously and cheaply, and I being very "busy in my own business, the flag stone business, and "having no inclination to dictate to him as to what he "should do, we gave the matter up."

Mr. McKelvey admits that he had never filled a single contract by constructing a pavement upon the method in question. (Page 161, line 39).

Mr. Shannon, in a straightforward manner, (page 209, line 11) relates his experience in trying the plan of

molding large blocks of concrete with the view of transporting and laying them to form a pavement, and declares it impracticable. The room necessarily required to place a considerable number of them to dry, the time required to dry them out, the difficulty of hauling, handling and placing, and the incidental breaking and chipping, all combined to make the method an expensive one to the extent, at least, of costing forty or fifty cents per sqnare foot. Mr. Shannon further declares that he never knew of anyone who constructed pavements in that way.

THE "IMMEDIATE CONTACT" METHOD AND THE "APPARENT-JOINT" METHOD.

There are twenty-seven recognized separate defences to a suit on a patent. The one known as the fourth defense, is to the effect that the alleged patent is not, and was not at any time a useful invention. In this suit, the respondent availed himself of this defense and set it up in his answer. The court, in finding for the complainant, and adjudging the patent valid, doubtless considered this defense and regarded it as unsustained by the testimony.

But in the reference the respondent, as it were, secures a reversal of this view and obtains a finding to the effect that laying concrete blocks in immediate succession without the interposition of anything between blocks, is a way to make concrete pavement as good as the patented one.

Judge Blatchford in Schillinger *v.* Gunther, speaking of the invention says: "It's value was at once per-

ceived and infringements became numerous." If the respondents in all the numerous suits brought on the Schillinger patent, had only known that they could have constructed concrete pavements equally as good as Schillinger's by simply laying down block after block in immediate succession and making apparent joints across the pavements after completion, what a great saving they would have made in their efforts to 'go round the Schillinger patent.'

Making believe that there is a joint serves quite as well as tar paper. Use of the imagination in this way has practical value. In like manner a cheerful but destitute lodger got along capitally without a looking-glass. In shaving himself, he said, he simply looked hard against the wall.

The evidence taken prior to the interlocutory decree was submitted to the Master, (page 146) but it may be doubted whether the Master gave it consideration. In his finding that it was practicable to lay the blocks in immediate succession, and by making apparent joints to produce as good pavement as that produced under the patent, thereby finding that interposition of tar paper or an equivalent was of no value, the Master either did not consider or lightly valued the following statements made by defendant as to the necessity of preventing the cohesion or interlocking of contiguous blocks laid in a plastic state.

Page 37, line 19: "That cement work runs together "so close that the fit is perfectly tight all over."

Page 38, line 26: "And put the other blocks "against it and ram the other stuff down to get it solid, "the pieces will squeeze through the paper into the

"holes of the previous block and wedge sort of saw-
"teeth fashion."

Page 36, line 8: "This (use of strips of wood)
"makes a joint which will allow blocks to be removed
"AND NOTHING ELSE WILL.

Page 9, line 9: "To shape the blocks so that they
"can be removed."

Page 40, line 19: "The discovery of the fact why
"cement pavements laid in blocks or in a plastic state
"should break so often."

Page 41, line 29: "Q. Now, did you use any
"kind of paper between blocks to form a joint in this
"pavement at Nugents? A. I did. I used that yel-
"low paper I spoke of. Q. How did you come to use
"that? A. Well, I wanted to make a joint that would
"move up and down."

Page 41, line 47: "Now I want to say if you ram
"hard at one place close to the other block, you con-
"solidate the stuff and also force the bottom of it
"against the neighboring block."

Page 42, line 14: "Q. What causes this? A. The
"pressure that is required to consolidate your concrete."

Page 42, line 44: "Instead of a wooden strip, I
"practically have a concrete strip."

Page 43, line 1: "Q. And this is to allow one
"block to be removed without destroying it, and also
"to allow the block to raise independently in cold
"weather in case of frost? A. Yes, sir."

Page 46, line 7: "Q. I believe though, in practice,
"you always use something to form a separator between
"the two blocks, do you not? A. Yes, sir."

Page 48, line 3: "Now I will ask you this question:

"If all your method and mechanical processes have not "been directed to the point of effecting individuality in "the blocks? A. If, by individuality you mean the idea "of allowing them to move amongst each other, and "be removed, I answer yes."

Page 96, line 41: "About three years ago, when I "started laying pavements in place and in large blocks "I had been entirely familiar with the method of mak- "ing blocks so as to separate them, and the method "that I know and have never tried was that indicated "as I said before, in the Russ patent. He stated that "to make a joint that will not adhere to concrete pre- "viously placed he used a strip of wood wider at the "bottom than at the top, and that I regarded as "amply sufficient for all cases, and besides, he specified "as equivalents such things as iron, iron stone, pottery "and any other thing, showing by the incongruous na- "ture of the material specified, that what he had in mind "was nothing limited except by its practicability of "attainment."

The foregoing testimony, aside from the testimony of complainant and his witnesses, ought to be sufficient to establish the proposition that in laying concrete pavements in a plastic state some proper material should be interposed between the blocks. The pretense of the respondent and the finding of the Master that concrete blocks may be laid plastic and in immediate succession without interposing a substance to produce separation can not be sustained, at least by that portion of complainant's testimony hereabove cited.

In the foregoing argument, it will be perceived that nearly all the questions of fact discussed, are made out

by the testimony of the respondent himself. It is true that a good deal that he said was unintelligible and his explanations and qualifications were at times "interlocked" and mystifying, yet, out of the superabundance of jumbled material which was to serve to make clear his pretended discovery, to praise the Russ method, to disprove the value of the Schillinger invention, to show the chiseling method, the alternate block method, the immediate contact method, the make-believe, or chalk-line method, "the patent corner protector," and "another method," and that it was foolish to pay royalty on the Schillinger patent, may be gathered such a number of clear and definite statements touching the nature and requirements of concrete pavements as will refute his pretended theories and standards of comparison.

At one time only he, as it were, pleads in extenuation and wishes it understood that what he had done he did innocently. But actions speak louder than words, and it is a sufficient answer to all the theories, discoveries, experiments, standards of comparison set forth by respondent to eke out a relief from the obligation to account to complainant for the profits of the infringement, to point to the fact that after the expiration of Schillinger patent after the accounting began, respondent in the work he was doing upon Lindell avenue pavement returned to the construction of a kind of pavement covered by the Schillinger patent. (Page 206, line 37.)

He states that "after the patents had run out, I used the deep groover."

CONCLUSION.

The foregoing argument amply supports, it is submitted, the following propositions:

First.—That the patent of John J. Schillinger covers a concrete pavement wherein tar-paper or its equivalent is arranged between adjoining blocks and is for a product or article of manufacture or composition of matter as distinguished from the process by which it is constructed.

Second.—That the rule in Mowry *v.* Whitney, invoked by the respondent and admitted by the Master, has no application to this case.

Third.—That the standards of comparison contemplated by the rule must be those only that are known as practicable at the time of the infringement, and in common use and have been sufficiently tested to afford data to determihe the cost and quality of the work produced thereby.

Fourth.—That the burden of showing such particulars respecting the standards set up is upon the respondent.

Fifth.—That the several methods set up by the respondent were not tried by him until after this suit was

brought, were confessedly resorted to as experiments, and that only to a very limited extent, and that not sufficient data as to cost, character and durability of work have been presented to entitle them to be set up as standards of comparison, and that many circumstances combine to support the view that these so-called standards are mere subterfuges to enable the respondent to withhold the large profits derived by him by his wilful trespass upon the rights of complainant.

Respectfully submitted,

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SUPREME COURT

OF THE

UNITED STATES.

OCTOBER TERM, 1892.

WILLIAM SHANNON,
Appellant,
vs.
PRESTON M. BRUNER. } NO. 96.

PRESTON M. BRUNER,
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Appeals from the Circuit Court of the United States for the Eastern District of Missouri.

BRIEF IN BEHALF OF WILLIAM SHANNON, APPELLANT,

By UPTON M. YOUNG,
ALEXANDER YOUNG, and
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Appeals from the Circuit Court of the United States for the Eastern District of Missouri.

BRIEF IN BEHALF OF APPELLANT.

STATEMENT OF THE CASE.

This is a suit in Equity, brought in the Circuit Court of the U. S. for the Eastern Division of the Eastern Judicial District of Missouri, by William Shannon against Preston M. Bruner, founded on the alleged infringement of reissued Letters Patent, No.

4,364, granted to John J. Schillinger, May 2, 1871, for an "improvement in concrete pavements"—on the surrender of original Letters Patent No. 105,599, granted to said Schillinger, July 19, 1870.

The Defenses set up in the answer are the invalidity of the reissue, want of utility in the invention, want of novelty, and non-fringement. The bill was filed on the 25th of March, 1886. The interest of Shannon was that of exclusive licensee under the reissued patent, for the County and City of St. Louis, Mo. On the 27th of May, 1879, Schillinger, the patentee, in writing and for value, assigned to J. L. and A. Hull, all his title in the territory above named, to such reissued Letters Patent, No. 4,364. On the 5th of March, 1886, the said J. L. and A. Hull, in writing and for value, assigned all their title to such said reissued Letters Patent, for the City and County of St. Louis, Mo., to said Shannon. The said assignments each gave right to recover for past infringement. Issue was joined and proofs were taken on both sides, and on the 3rd day of May, 1887, the Court entered an interlocutory decree, adjudging that the reissud patent was valid, that the defendant infringed it, and that William Shannon, Complainant, recover from Defendant, Preston M. Bruner, the profits and gains which had accrued to him by reason of all infringements of said reissued Letters Patent No. 4,364, and that in addition thereto the said Complainant recover the damages he has sustained by reason of said infringements, to be assessed pursuant to the Statute. The decree ordered a reference to a master to take an account of the profits and the damages, and, also, ordered a perpetual injunction against Bruner, enjoining him and agents from further infringement of said reissued Letters Patent.

The master took proofs, and on the 27th day of June, 1887, filed his report, to the effect that the number of square feet of pavement manufactured by defendant, during years 1884-5-6 and 7, under the patent in suit, as construed by the Court, was 75,000 square feet; that the defendant realized

from his work the gross price of twenty-nine and 62-100 cents per foot, that his expense for consruction was eighteen and 30-100 cents per square foot, and that he realized a manufacturer's or business profit of eleven and 29-100 cents per square foot, and that defendant realized in the aggregate as profits. $8,467.48. (Record pages 105-6-7.)

Neither party filed exceptions to the foregoing part of the report. The master's report concludes as follows:

"The order of reference directs me to ascertain, take, state and report to the court an account of the gains and profits which the defendant has received, or which have accrued to him by reason of the infringements of said defendant of the patent, and also to assess the damages suffered by the complainant by reason of all infringements by said defendant pursuant to the statute.

I interpret that order to mean that the profits which I am to consider are those which established rules of procedure in patent cases recognize as proper subjects of inquiry. I understand that the profits to be recovered in a case of this description are the profits attributable to the use of the patented improvement. Whatever distinctive profit belongs to the use of the "arrangement of tar paper, or its equivalent, between adjoining blocks of concrete, substantially as and for the purposes set forth in the patent, is the profit to be recovered." "Such distinctive profit must be shown affirmatively by the plaintiff. If he fails to show it he can recover nothing as profits."

Under this rule, which I understand to be too well settled to now be questioned, I have carefully considered the evidence before me with reference to this question of profits. In the light of the testimony I cannot say that the value of the pavement laid by the defendant was due altogether to his use of the patented improvement. I cannot find any evidence upon which I can reach a satisfactory conclusion as to the value of the improvement. With the burden of proof upon him to establish actual damages I cannot

find that the complainant has satisfied the requirements of the rule to which I have already referred. Accordingly I find that the defendant has sustained only nominal damages and recommend judgment accordingly." (Record pages 106-7.)

To this report Shannon excepted as follows:

"First exception. For that the master hath in and by his said report certified that, having ascertained that the defendant had made and derived a total profit of $8,467 from the construction of concrete pavement in which the patented improvement of complainant was used, he, the master, was unable from the testimony submitted to him to determine to what extent said improvement contributed to the production of said profit, and hath recommended that a decree for nominal profits only be rendered in favor of the complainant; whereas the fact was, as complainant is able to show, that complainant offered testimony tending to determine to what extent said patented improvement contributed to the production of said profit; which testimony was, at the instance of defendant, excluded by the master." (Record page 164.)

Shannon filed amended exceptions to the master's report as follows:

"First exception. For that the master hath in and by his said report certified that, having ascertained that the defendant had made and derived a total profit of $8,467 from the construction of concrete pavement in which the patented improvement of complainant was used, he, the master, was unable from the testimony submitted to him to determine to what extent said improvement contributed to the production of said profit, and hath recommended that a decree for nominal profits only be rendered in favor of complainant; whereas the fact was, as complainant is able to show, that complainant offered testimony tending to determine to what extent said patented improvement contributed to the production of said profit, which testimony was, at the instance of defendant, excluded by the master. Reference is hereby made to the

testimony taken before the master as follows, to-wit: pages 59 and 60, where certain testimony from the witness George A. Hynes was excluded, and pages 61 and 62, where certain testimony of the witness William Shannon was excluded." (Record page 165.)

The above exceptions came on to be heard on the 3d of October, 1887, before Justice Miller and Judges Brewer and Thayer. The exceptions were sustained, the reports set aside, and the cause remanded to the master for further proceedings. (Record page 166.)

The master took further proofs and on 17th of December, 1887, filed a supplemental report as follows:

MASTER'S SUPPLEMENTAL REPORT.

"When this case was heard by me originally the complainant apparently proceeded upon the theory that the *entire profit* realized by the respondent from laying a pavement under the Schillenger process should be assessed against him as damages. I then was of the opinion that such a rule of damages was improper. I am still of the same opinion. Certain questions were asked, to which I sustained objections. My ruling in that regard was not approved by the court. The case was sent back to me for further proceedings. In sending back the case the court said I ought not to have returned the report without some element of profits or damages.

Accordingly the case has been further heard. I have admitted all of the evidence offered. I have allowed the complainant the utmost latitude. He has, however, renewed none of the questions which were excluded upon the former hearings. He has, proceeded, at the later hearings, on the theory that a pavement laid on the plan of Schillenger will not crack, but that one laid upon another plan will crack, and that as a cracked pavement is—worthless than a perfect one the difference in value per foot, as applied to all of the pavement laid by the respondent down to the time of the injunction—some seventy-five thousand feet—is the true criterion of damage.

I do not understand the court to require me to find in any event that the respondent has realized a profit from the use of the patent owned by the complainant. I have, however, carefully reviewed the evidence to see, if possible, where the respondent has realized profits attributable to his use of the patent, but I have been unable to arrive at conclusion which will afford the complainant substantial damages.

To insert tar paper between blocks of concrete in the course of their manufacture is merely to create a joint. The joint can be made, according to the evidence before me, by omitting the tar paper. How the pavement is to be constructed does not seem to enter into the consideration of owners who contract for the pavement. They contract for a concrete pavement. The contractor guarantees to lay one which will not crack, Prior to the injunction the respondent had open to him and he might have used any of the methods other than the Schillinger method which the evidence shows were open to use. He might have laid the pavement in alternate blocks. He might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion. In either way he would have produced a pavement with joints, which, as far as I can see from the evidence, would have been as good as that produced under the patent; at least as far as concerns the element of joints. I do not understand that the insertion of tar paper or other substance in the joints of the pavement alone gives such pavement its value or usefulness. No one, in the light of the evidence before me, can reach such a result. It is not such an advantage over other methods open to the respondent as ought to give to the complainant the right to recover the profits of laying the entire pavement. Therefore the measure of recovery must be limited to the benefits which the respondents enjoyed from the use of the patented improvement. No license fee has been shown by which a rule of recovery might have been secured. No contract with special reference to the use of the improvement has been shown to

have been made by the respondent with any customer. The use of the pavement is not shown to have been limited to any particular locality. Its use was and is general and is confined to no exceptional district. With the improvement the pavement costs neither more nor less than it does without such improvement: at least the difference is not appreciable.

In the light of these features of the case, I cannot reach the conclusion that ground has been afforded me for recommending an award of substantial damages. Hence I recommend that the complainant be adjudged nominal damages, and no more.

All of the evidence which the parties, under the widest possible latitude afforded them, have seen fit to introduce is now before the court, and if my conclusion is erroneous it can easily be corrected." (Record pages 166-7.)

On the 23rd day of December, 1887, and on the 16th of January, 1888, Shannon filed the following exceptions and amended exceptions to the master's supplemental report;

EXCEPTIONS TO SUPPLEMENTAL REPORT OF MASTER.

First exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford the complainant substantial damages." and hath recommended that a decree for nominal profits only be rendered in favor of complainant, and, as supporting such a conclusion, hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such other methods as being, first, a method described by respondent and by him designated as that of "alternate blocks;" and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having

"apparent joints marked off across the pavement after its completion."

Whereas the fact is that the testimony adduced before the master was such as to warrant him in finding substantial profits in favor of complainant. notwithstanding any and all testimony respecting other methods alleged by respondent to have been open to him.

Second exception. That the master, having adopted as a standard of comparison the method of constructing concrete pavement known in the testimony as that of alternate blocks, did thereby require complainant to answer and refute the pretenses of respondent respecting the qualities and cost of a pavement constructed according to such assumed methods.

Whereas the facts are. as will appear by the testimony. that said alternate blocks method is not. an established method. nor one ever used except experimentally by the respondent alone, and only to a limited extent. and not until after the institution of this suit, and that not a sufficient time has elapsed since respondent's experiments was made fully to test the duradility of such experimental work.

Third exception. For that the master, having adopted as a standard of comparison the said method of alternating blocks as aforesaid, and having reported such method of constructing concrete pavements to be as good as the Schillinger method, omits to qualify such conclusion by and find-s relative to the value of the extra time and labor necessarily involved in such alternate block method,thereby assuming that a pavement may be as cheaply constructed thereby as by the Schillinger method.

Whereas the evidence shows that the alternate block method as applicable to ordinary cases of demand for the construction of pavement necessarily involves delays and expenses not incident to the Schillinger method.

Fourth exception. For that the master, having adopted

as aforesaid as a standard of comparison the method of constructing concrete pavement by laying the blocks in immediate succession without the interposition of tar paper or its equivalent between said blocks, *and* hath certified that such a pavement so laid and having its surface divided into apparent blocks by joints marked across the pavement after its completion is equally as good as one provided with the patented improvement.

Whereas the fact is, as will appear by the testimony taken in this cause prior to the hearing, as well as that taken before the master, that such a pavement is practically a continuous pavement and is specially liable to become cracked by upheavel due to frost and is less durable and desirable than one wherein individuality of the concrete blocks is secured by the interposition of tar paper or its equivalent between such blocks.

Wherefore the said William Shannon excepts to the supplemental report of the master and hereby appeals therefrom to this honorable court and prays that the court may review said report and all the evidence taken in the cause, both that taken before the hearing as well as that taken before the master, and prays that the court may consider whether the methods of constructing concrete pavements alleged by the respondent to have been open to him are practicable ones or not; if so, whether or not they have been practiced to the extent that their cost, quality, and durability are no longer matters of experiment or surmise; if so, whether or not these facts were known to the respondent at the time he infringed complainant's rights, and if found practicable and established and known by respondent at the time he infringed complainant's rights that the court, adopting as a standard of comparison the best of such methods so found to have been established, may determine to what extent, either in excellence or cheapness or in both respects, complainant's patented method excels in value such standard and by such measure of value to estimate and decree profits to complainant from the total profits

found by the master to have been derived by respondent in the manufacture and sale of concrete pavement wherein he has infringed complainant's rights.

AMENDED EXCEPTIONS OF COMPLAINANT TO THE SUPPLEMENTAL REPORT OF THE MASTER.

First exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford the complainant substantial damages," and has recommended that a decree for nominal profits only be rendered in favor of complainant, and as supporting such a conclusion, hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement " other than the Schillinger method," and did specify such other methods as being, first, a method discribed by respondent and by him designated as that of alternate blocks, and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having "apparent joints marked off across the pavement after its completion."

Whereas the fact is that the Schillinger pavement described and claimed in the letters patent in this suit is a complete and entire invention and is in no way related to the several methods and pavements set up by respondent as standards of comparsion with it, and that the master, notwithstanding all testimony as to pavements of other kinds, ought to have awarded to complainant the *entire profits* realized by respondent in making and selling pavements covered by said patent.

Second exception. For that the master hath in and by his supplemental report certified that from the testimony submitted to him he hath been "unable to arrive at a conclusion which will afford complainants substantial damages," and hath recommended that a decree for nominal profits only

be rendered in favor of complainant. and, as supporting such a conclusion, hath found as matters of fact that "prior to the injunction the respondent had open to him and might have used" methods of constructing concrete pavement "other than the Schillinger method," and did specify such other methods as being, first, a method described by respondent and by him designated as that of alternate blocks, and, second, a method whereby the blocks are laid in immediate succession without any foreign substance interposed between blocks to produce separation, but having "apparant joints marked off across the pavement after its completion."

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavements, the fact is that the testimony adduced before the master was such as to warrant him in finding substantial profits in favor of complainant, notwithstanding any and all testimony respecting other methods alleged by respondent to have been open to him.

Third exception. That the master, having adopted as a standard of comparison the method of constructing concrete pavement known in the testimony as that of alternate blocks, did thereby require complainant to answer and refute the pretences of respondent respecting the qualities and cost of pavement constructed according to such assumed method.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavements, the facts are, as will appear by the testimony, that said alternate block method is not an established method, nor one ever used, except experimentally, by the respondent alone, and only to a limited extent, and not until after the institution of this suit, and that not a sufficient time has elapsed since respondents experiments were made fully to test the durability of such experimental work.

Fourth exception. For that the master, having adopted as a standard of comparison the said method of alternate blocks as aforesaid, and having reported concrete pavements constructed by such method to be as good as the Schillinger pavement, omits to qualify such conclusion by any findings relative to the value of the extra time and labor necessarily involved in such alternate block method, thereby assuming that such pavement may be as cheaply constructed as may the Schillinger pavement.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with the other pavements, the evidence shows that the alternate block method, as applicable to ordinary cases of demand for the construction of a pavement, necessarily involves delays and expenses not incident to a construction of the Schillinger pavement.

Fifth exception. For that the master, having adopted as aforesaid as a standard of comparison the method of constructing concrete pavements by laying the blocks in immediate succession without the interposition of tar paper or its equivalent between said blocks, *and* hath certified that such a pavement so laid and having its surface divided into apparent blocks by joints marked across the pavement after its completion is equally good as said Schillinger pavement.

Whereas, assuming that it is proper for the master in this inquiry to bring the pavement covered by said patent into comparison with other pavement, the fact is, as will appear by the testimony taken in this cause prior to the hearing, as well as that taken before the master, that such a pavement is practically a continious pavement, and is specially liable to become cracked by upheaval due to frost, and is less durable and desirable than one wherein individuality of the concrete blocks is secured by the interposition of the paper or its equivalent between such blocks.

Wherefore the said William Shannon excepts to the supplemental report of the Master and hereby appeals therefrom to this honorable court and prays that the court may consider whether said invention is not an *entirety* and whether it is not unrelated to any other inprovement and whether the profits realized by the respondent in infringing the patent thereon are not entirely due to complainant.

But if the court should find that such is not the case, and that it was proper for the master to consider other pavements in determining the question of profits, then the complainant prays that the court may review said report and all the evidence taken in the cause, both that taken before the hearing as well as that taken before the master, and prays that the court may consider whether the methods of constructing concrete pavements alleged by the respondent to have been open to him *as* practicable ones or not; if so, whether or not they have been practiced to the extent that their cost, quality, durability are no longer matters of experiment or surmise; if so, whether or not these facts were known to the respondent at the time he infringed complainant's rights.

And, if found practicable and established and known by respondent at the time he infringed complainant's rights, that the court, adopting a standard of comparison the best of such methods so found to have been established, may determine to what extent, either in excellence or cheapness or in both respects, complainant's patented pavement excels in value such standard, and by such measure of value to estimate and decree profits to complainant from the total profits found by the master to have been derived by respondent in the manufacture and sale of concrete pavements wherein he has infringed complainant's rights. Record pages 214-5-6-7-8.

FINAL DECREE.

On a hearing the Court entered the following final decree:

"This cause coming on to be heard upon the amended exceptions filed by complainant to the supplemental report of Chester

H. Krum, master herein, and the same being argued by counsel and duly considered by the court, it is ordered by the court that all said exceptions be, and are hereby, overruled, and that said supplemental report of the master, and also the original report of said master herein, filed on June 27th, 1887, be and the same are hereby, in all respects confirmed.

And it appearing to the court that by reason of the expiration of the letters patent (on which this suit was brought) on July 19, 1887, after the entry of the interlocutory decree herein, the injunction therein awarded is no longer in force, it is therefore ordered, adjudged and decreed that complainant have and recover of defendant the sum of six cents, and also his cost up to and including the entry of the interlocutory decree herein, and that defendant have and recovery of complainant his costs since the entry of said interlocutory decree, including cost of reference herein; and it is further ordered that the master, Chester H. Krum, be allowed the sum of three hundred ($300) dollars for his services under orginal reference, and one hundred ($100) dollars in full for services under supplemental reference." (Record p. 219).

William Shannon has appealed from the above decree, and Preston M. Bruner has appealed from the decree of May the 3d 1887. (Record p. 103.)

The specifications, claims, and drawings of the original and the reissued patents are as follows, the specifications and claims being placed in parallel columns, the parts of each which are not found in the other being in italic, and the drawings of the original and the reissue being the same:

Original.	*Reissue.*
"Be it known that I, John J. Schillinger, of the city, county, and State of New York, have invented a new and useful improvement in concrete pavements; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—	"Be it known that I, John J. Schillinger, of the city, county, and State of New York, have invented a new and useful inprovement in concrete pavements; and I do hereby declare the following to be a full, clear and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompaning drawing, forming part of this specification, in which drawing—

"Figure 1 represents my pavement *in plan view*. Fig. 2 is a vertical section of the *pavement*.

"This invention relates to *pavements for sidewalks and other purposes, and consists in combining*, with the joints of concrete *pavements*, strips of tar-paper of equivalent material arranged between the several blocks in such a manner as to produce a suitable tight joining and yet allow the blocks to be raised reparately without affecting *or injuring* the blocks adjacent thereto.

"In carrying out my inventions I form the concrete by mixing cement with sand and gravel or other suitable *materials* to form a *suitable* plastic *composition*, using about the following proportions: One part, by measure, of cement; one part, by measure, of sand, and from three to six parts, by measure of gravel, *using* sufficient water to *make* the mixture plastic; but I do not confine myself to any proportions for making the concrete composition. While the mass is plastic I lay or spread the same *upon* the foundation or bed of the pavement, either in *moulds* or between movable joists of the proper thickness, so as to form the edges of the concrete blocks *a a*, &c. When the block *a* has *been formed* I *take strips of tar-paper b, of a width equal or almost equal to the highth of the block, and place them up against the edges of the block in such a manner that they form the joints between such block and the adjacent blocks*. After completing

"Figure 1 represents a *plan of* my pavement. Figure 2 is a vertical section of the *same*. *Similar letters indicate corresponding parts.*

"This invention relates to *a concrete pavement which is laid in sections, so that each section can be taken up and relaid without disturbing the adjoining sections*. With the joints of *this sectional* concrete *pavement or combined* strips of tar-paper or equivalent material arranged between the several blocks *or sections* in such a manner as to produce a suitable tight joint and yet allow the blocks to be raised separately without affecting the blocks adjacent thereto.

"In carrying out my invention I form the concrete by mixing cement with sand and gravel or other suitable *material* to form a plastic *compound*, using about the following proportions; One part, by measure, of cement; one part, by measure sand, and from three to six parts by measure, of gravel, *with* sufficient water to *render* the mixture plastic; but I do not confine myself to any *definite* proportions *or materials* for making the concrete composition. While the mass is plastic I lay or spread the same *on* the foundation or bed of the pavement, either in *moulds* or between movable joists of the proper thickness, so as to form the edges of the concrete blocks *a a*, *one block being formed after the other*. When the *first* block has *set* I *remove the joists or partitions from between it and the next block to be formed, and then I form the second block and so on, each succeeding block being formed after the adjacant blocks have set*, [*and*

one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint and proceed with the formation of the new block until it is completed. In this manner I proceed *in making all the blocks* until the pavement is completed, interposing tar-paper between their several joints, as described. The paper constitutes a tight water-proof joint, but it allows the several blocks to heave separately from the effects of frost, or to be raised or removed separately, whenever occasion may arise, without injury to the adjacent blocks. The paper *does not adhere* when placed against the *edge of the fully formed* block, and therefore the joints are always free between the several blocks, although *adherence may take place between the paper and* the *plastic* edges of the blocks *which are* formed after the *paper* joints *are set up in place.*

since the concrete in setting shrinks, the second block when set does not adhere to the first, and so on.] *and when the pavement is completed each block can be taken up independent of the adjoining blocks. Between the joints of the adjacent blocks are placed strips b of tar-paper or other suitable material in the following manner:* After completing one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint and proceed with the formation of the new block until it is completed. In this manner I proceed until the pavement is completed, interposing tar-paper between the several joints as described. The paper constitutes a tight water-proof joint, but it allows the several blocks to heave separately from the effects of frost, or to be raised or removed separately, whenever occasion may arise, without injury to the adjacent blocks. The paper when placed against the block *first formed does not adhere thereto*, and therefore the joints are always free between the several blocks, although *the paper may adhere to* the edges of the *block or* blocks formed after the *same has been set up in its place between the* joints. [*In such cases, however, where cheapness is an object, the tar-paper may be omitted and the block formed without interposing anything between their joints, as previously described. In this latter case the joints soon fill up with sand or dust, and the*

pavement is rendered sufficiently tight for many purposes, while the blocks are detached from each other and can be taken up and relaid each independent of the adjoining blocks.]

"What I claim as new and desire to secure by letters-patent is—

"The arrangement of tar-paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose *described.*

"What I claim as new and desire to secure by letters-patent is—

"*1. A concrete pavement laid in detatched blocks or sections, substantially in the manner shown and described*

"*2.* The arrangement of tar-paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose *set forth.*"

Fig. 1.

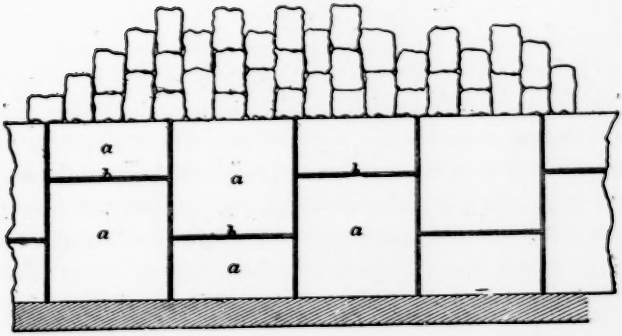
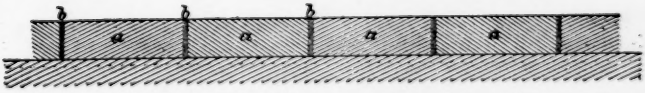


Fig. 2.



On the 1st of March, 1875, Shillinger filed in the Patent Office the following disclaimer: "To the Commissioner of Patents: Your petitioner, John J Schillinger, of the city and county of

New York, represents that letters-patent of the United States, reissue No. 4,364, bearing date May 2, 1871, were granted to him for an improvement in concrete pavements. That he has reason to believe that, through inadvertence, accident, or mistake, the specification and claim of said letters-patent are too broad, including that of which your petitioner was not the first inventor, and he therefore hereby enters his disclaimer to the following words: 'And since the concrete in setting shrinks, the second block when set does not adhere to the first, and so on,' and which occurs near the middle part of the said specification, and to the following words near the end of the specification: 'In such cases however, where cheapness is an object, the tar-paper may be omitted and the blocks formed without interposing anything between their joints, as previously described. In this latter case the joints soon fill up with sand or dust, and the pavement is rendered sufficiently tight for many puposes, while the blocks are detached from each other and can be taken up and relaid each independent of the adjoining blocks'. Your petitioner hereby disclaims the forming of blocks from plastic material without interposing anything between their joints while in the process of formation. Your petitioner owns the said patent and the whole interest therein, except in the following places or territory, for which he has granted exclusive licenses under royalty, or sold rights under said patent, to wit, the counties of Kings, Queens and Richmond, New York State; Hartford County, Connecticut; the District of Columbia; the States of New Jersey, Georgia Maryland, Louisiana, Texas, Ohio, Michigan, Missouri, and Illinois, which above-named States and places comprise all the territory for which he has sold or granted exclusive licenses or rights in or under said patent, to the best of his recollection, knowledge, and belief."

The words specifically disclaimed by the disclaimer are embraced in brackets in the copy of the specification of the reissue above set forth.

ASSIGNMENTS OF ERROR.

I.

The Court erred in overruling appellant's exceptions and amended exceptions to the master's supplemental report.

II.

The Court erred in overruling (and in not sustaining) appellant's exceptions and amended exceptions to the master's supplemental report, and in not entering a decree, in favor of appellant, against appellee, for the sum of Twenty-five thousand four hundred and two 44-100 dollars ($25,402.44-100) (with all costs) three times (as provided by law) the amount of the profits, ($8,467.48) actually realized by said appellee by reason of his wilful and unjust infringement.

BRIEF.

I.

Since the trial of this case in the U. S. Circuit Court, at St. Louis, Mo., the validity of the Schillinger patent has been sustained, by the U. S. Supreme Court in the case of Hurlbut vs. Schillinger, 130. U. S. 456. Not only has the patent been sustained, but every position for which Wm. Shannon, appellant, contended in the lower court has been approved by the U. S. Supreme Court.

The Schillinger patent seems to have been born in the midst of revolution.

As appears, from the case cited, it has been in litigation in the following cases:

In the Circuit Court for the Southern District of New York, before Judge Shipman, in February, 1877, in *Schillinger* v. *Gunther*, (14 *Blatchford*, 152, and 2 *Ban. & Ard.* 544, and 11 *Off. Gaz.* 831,) and in the same case, before Judge Blatchford, in August, 1879. (17 Blatchford, 66, and 4 Ban. & Ard. 479, and 16 Off. Gaz. 905;) in the Circuit Court for the District of Cali-

fornia, before Judge Sawyer, in May, 1881, in California Artificial Stone Paving Co. v. Molitor, and The Same v. Perine, (7 Sawyer, 190, and 8 Fed. Rep. 821, and 20 Off. Gaz. 813;) in the Circuit Court for the Northern District of New York, before Judge Blatchford, in July, 1883, in Schillinger v. Greenway Brewing Co., (21 Blatchford, 383, and 17 Fed. Rep. 244, and 24 Off. Gaz. 495;) and in the Circuit Court for the Southern District of Ohio, before Judge Sage, in June, 1884, in Kuhl v. Mueller, (21 Fed. Rep. 510, and 28 Off. Gaz. 511;) the patent was sustained. In the Supreme Court of the District of Columbia, in general term, in July, 1885, in Schillinger v. Cranford, (4 Mackey 450, and 37 Off. Gaz. 1349.) it was held void, on the question of novelty. It was also interpreted by Judge Sawyer, in the Circuit Court for the District of California, in California Artificial Stone Paving Co. v. Freeborn, in January, 1883, (8 Sawyer, 443, and 17 Fed. Rep. 735.) and by Judge Deady, in the Circuit Court for the District of Oregon, in August, 1887, in Schillinger v. Middleton, (31 Fed. Rep. 736.)

The patent was before this court in California Paving Co. v. Molitor, (113 U. S. 609.) in March, 1885, but only on a question of contempt, and in California Paving Co. v. Schalicke, (119 U. S. 401,) in December, 1886.

CONSTRUCTION OF THE SCHILLINGER PATENT.

In the case of Hurlbut vs. Schillinger, 130, U. S. 456, the Supreme Court uses this language:

"We are of opinion that the proper construction of the reissued patent is, that the invention consists in dividing the pavement into blocks, so that one block can be removed and repaired without injury to the rest of the pavement, the division being effected by either a permanent or a temporary interposition of something between the blocks. Concrete pavement had been laid before in sections, without being devided into blocks. The effect of the disclaimer was to leave the patent to be one for a pavement wherein the blocks are formed by interposing some separating

material between them. To limit the patent to the permanent interposition of a material equivalent to tar-paper, would limit the actual invention. The use of a bottom layer of coarse cement, and placing on it a course of fine cement, and dividing the upper course into blocks by a trowel run partially or wholly through the upper course while it is plastic, in a line coincident with the joints between the sections in the lower layer, accomplishes the substantial results of Shillinger's invention, in substantially the way devised by him, and is within the patent as it stands after the disclaimer. The disclaimer took out of the first claim of the reissue only so much thereof as claimed a concrete pavement made of the plastic material laid in detached blocks, without interposing anything in the joints in the process of formation, leaving that claim to be one for such a pavement laid in detached blocks, when free joints are made between the blocks, by interposing permanently or temporarily between them, in the process of their formation, tar-paper or its equivalent."

In the case of Hurlbut vs. Schillinger *supra*, the following ingenious method of infringement was adopted, as appears from the opinion of the court:

"First, joists are placed seven to eight feet apart, in front of the property where the work is to be laid. First, one stone is formed by placing a joist across between the others at right angles, generally at about four feet from the place of beginning. In this space a mortar, composed of sand, gravel, and cement, is put and thoroughly tamped, so that the coarse material will be from three four inches in thickness, leaving about one-half inch on top for a mortar composed of sand and cement, which is troweled off and made even with the top surface of the joists. Then the short joist that is put in at right angles, as before described, is taken up and placed about the same distance as before, and again filled in. The finer material in the coarse concrete is generally worked next to the joist, so as to make a good, smooth, strong edge. When the

top stuff is put on this last stone, and finished over on top with a trowel, the joint between the two stones being marked on the outer joist, a trowel is drawn through the top stuff, to make a joint straight, to correspond with the joint below."

Upon the above state of facts the court commented as follows:

"We are, therefore, of opinion that the first claim of the reissue, as it stands after the disclaimer, is infringed, because the defendant's pavement is a concrete pavement, laid in detached blocks or sections, substantially in the manner shown and described in the specification of the reissue, the detached blocks in the upper course being the equivalent of the detached blocks or sections of the Schillinger pavement; and that the second claim of the reissue is infringed, because the *temporary use of the trowel* or cutting instrument, to divide the upper course into blocks, is the epuivalent of the tar-paper of the Schillinger patent, the cutting making a division which controls the cracking, and facilitates the taking up and relaying of the blocks or sections in the upper coarse "without disturbing the adjoining sections," and the trowel being interposed to effect its object during the process of forming the pavement on the spot where it is to remain."

In the case of Schillinger vs. Greenway Brewing Co., 21 Blatchford 383, tried before Judge Blatchford in U. S. Circuit Court, Northern District of New York—it was held "that the 2d claim of the reissue was infringed by a concrete pavement which had an open cut made by a trowel entirely through two courses of material, the line of cut in the upper course being directly over the line of cut in the lower course, and that the interposition of the trowel, though temporary, was an equivalent for the tar-paper, even though the joint was left open after the trowel was removed, and was not made tight."

THE QUESTION OF PROFITS.

In the lower Court the able Judge employed this language (Record p. 226): "Shillinger simply devised a new method of laying a particular kind of pavement, to-wit, concrete, which was well known and in common use, he did not invent a new pavement." In reply—certainly not. Nor did he invent new sand, new lime, nor other elements which nature, with a generous hand, had supplied—and which time out of mind, have entered into the composition of pavements. The position for which we contend was that in the case of the Schillinger patent "the pavement was a complete combination, in itself, differing from every other pavement, and that the profit made by Bruner was a single profit derived from the construction of the pavement as an entirety."

We insisted that the case of Elizabeth vs. Nicholson Pavement Co., 97 U, S. 121, was an authority in our favor. In Hurlbut vs. Schillinger, et al., 130 U. S., 456, decided in April, 1889, (one year after the case of Shannon vs. Bruner was argued) the Supreme Court announced the position for which we, in vain, contended in the lower court, and said that the Schillinger patent was like the Nicholson patent in this, that "the pavement was a complete combination, in itself, differing from every other pavement and the profit made by the defendant was a single profit, derived from the construction of the pavement as an entirety." See also Callaghan vs. Meyers 128, U. S. 617-665-6.

As combined and arranged we say that the Schillinger pavement was a new structure, a new, useful, original, valuable, and and complete combination, and this too, without reference to how old concrete pavements were, or how *very* old were the various elements of which they were composed.

The following extract from the opinion of the lower Court will show the theory there adopted.

"It seems clear that this case is not controlled by the princi-

ple of the decision in Elizabeth vs. The Nicholson Pavement Co., * * * * * * * * It is, perhaps, unnecessary to point out the distinction between this case and the one relied upon by the complainant, but the apparent confidence with which the case of Elizabeth vs. The Nicholson Pavement Co. is cited, justified such course. * * * *" (Record p. 226.)

In Hurlbut vs. Schillinger, *supra*, the Court says:

"Within the decision in Garretson vs. Clark, 111 U. S., 120, the proof in this case is satisfactory that the entire value of the defendant's pavement, as a marketable article, was properly and legally attributable to the invention of Schillinger."

In Elizabeth vs. Nicholson Pavement Co. (97. U. S. 126, 139), the Court decided that "when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits." See Root vs. Railway Co., 105, U. S. 189,203.

THE UTILITY OF THE INVENTION.

Judge Blatchford, delivering the opinion of the U. S. Supreme Court, in Hurlbut *vs.* Schillinger says:

"The invention of Schillinger was a very valuable one. The evidence is that it entirely superseded the prior practice of laying concrete pavements in a continuous adhering mass."

In the case of Shannon vs. Bruner, 33 Federal Reporter, p. 290, (now before this court) Judge Thayer, said:

"The fact that so many attempts have been made (as disclosed by the proofs and briefs in this case) to lay concrete pavement substantially in the mode described in the Schillinger specifications demonstrates very conclusively that the method of dividing a

concrete pavement into separate blocks * * * has substantial merit. * * * This is evidently the view entertained by men experenced in the business of laying concrete, either for pavements or floors, and there appears to be no reason to doubt the utility of the invention." (Record p. 224.)

THE QUESTION OF NOVELTY.

Upon the question of novelty defendant introduced about twenty five patents of "various and doubtful ancestry." He also, introduced as an expert Mr. Samuel Knight, a member of the firm of Knight Bros. St. Louis solicitors, for defendant,—though not *personally* engaged in this case. The witness is perfectly competent and credible. The propriety of introducing him *might*—(but it will not) be debated.

This witness (Record p. 99) states, in reply to question 5 that he regards it as an essential feature of the Schillinger invention to make a water proof joint between the blocks. Of course this answer disqualifies the witness as an expert. It is due to the witness to state that he admitted he had not read any of the decisions of the U. S. Courts touching the validity of the Schillinger patent. The witness having disqualified himself, as an expert, with the assistance of other members of his firm, turns *his electric light* upon about twelve patents (English and American.) See list of said patents (Record 99, 100, 101 102.)

Judge Thayer in commenting upon some of the above patents used this language: (Record 224-5.)

"The third defence insisted upon by the defendant is that the patent is void for the want of invention in view of the older art." Numerous prior patents have been pleaded and offered in evidence in support of this defence. The patents chiefly relied upon seem to be those of F. N. Hopkins, issued in November, 1869; that of Horace P. Russ, issued March, 28th, 1854, and that of W. B. Steele, issued in July, 1869.

With respect to the Russ patent it is unnecessary to do more than to call attention to the remarks of Judge Blatchford with respect to that patent in the case of Schillinger *vs.* Greenway Brewing Company, 17 Federal Reporter 244, namely, "The Russ patent shows a concrete foundation for a stone pavement without joints and having removable panels consisting of frames filled with concrete to be lifted out to give access to water pipes." Although no expert testimony was introduced by the defendant in that case to point out wherein the Russ patent had a bearing upon the invention of Schillinger, yet the patent itself and the specifications were before the court, and in themselves they clearly showed the nature and extent of the Russ invention and the bearing, if any it had, on the Schillinger process. Giving the Schillinger patent the scope which has heretofore been given it and conceding that that which is claimed and covered by it is patentable, it seems obvious that it was not anticipated by the Russ patent. Neither does the Hopkins patent anticipate the Schillinger invention The Hopkins patent was for a combination of Ritchie mineral or albertite with sand and gravel or other equivalent substances to form a conglomerate for paving or roofing material. The patent in question did not cover any particular method of laying the substance. The inventor evidently contemplated that is was to be laid in one continuous sheet or mass or that it should be moulded into blocks and laid in the same manner in which bricks are ordinarly laid The Steele patent approaches somewhat nearer to the invention claimed under the Schillinger patent, but even in the case of that patent it cannot be said that it anticipated the Schillinger invention.

Steele simply laid strips of wood diagonally across the bed or foundation prepared for the concrete and spread the concrete in one continuous mass over the strips of wood so as to imbed them therein. It does not appear, however, that he contemplated forming blocks or sections of concrete with joints extending from the foundation to the surface in the manner adopted by Schillinger.

The result of my investigation is that none of the defences interposed by the defendant have been established.

A decree will accordingly be entered in favor of the plaintiff as prayed for in the bill."

Among the patents relied upon by Bruner, as a defence were—

English patent to Claridge No. 7,489 of 1837;
English patent to D'Harcourt, No 7991 of 1839,
U. S. Patent No. 261, to H. P. Russ, reissued Mch. 28, 1854;
U. S. Patent to Van Camp, No. 93,142 July 27, 1869.
English Patent to A. Chesneau, 350, of 1852.

The above patents and others were carefully examined in the case of Hurlbut vs. Schillinger, *supra*. The Supreme Court disposed of them as follows:

An examination of the patents put in evidence by the defendant, in connection with the testimony in regard to them, shows that the Claridge pavement was not a concrete pavement, and was not formed in detachable blocks, but was a continuous asphalt pavement; that the D'Harcourt pavement was not a concrete pavement laid in detached blocks or sections, nor could one section be removed without disturbing adjacent sections; that the Russ patent shows a concrete foundation for a stone pavement, the pavement proper being constructed of granite or syenite placed on top of the concrete foundation, such a concrete foundation not being formed in detatchable blocks, but only being provided at certain places with removable panels, consisting of frames filled with concrete, to be lifted out to give access to water-pipes or for other purposes; that the Chesneau pavement was not a concrete pavement laid in detached sections or blocks, but was a continuous pavement, provided with panels to give access in certain places to gas and water-pipes, the panels being made of sections set in frames, which were removably inserted in the surrounding pavement, and there was no arrangement of tar-paper or its equivalent between adjoining blocks

of concrete, for the purpose set forth in the Schillinger patent; that the Coignet patent did not show a concrete pavement, made in detachable blocks after the manner of Schillinger's and built on the ground where it was to remain; that the De la Haichois pavement was not a concrete pavement laid in detachable blocks or sections, or having the arrangement of tar-paper or its equivalence between adjoining blocks of concrete, like that of Schillinger; and that the Van Camp patent showed only blocks formed in moulds, and removable from the moulds, or the pavement to be laid cemented in the moulds, and is not being stated that the blocks should be formed on the spot where they were to remain, nor that they should be formed of cement and gravel or sand. It further appears that, in the Van Camp patent, when the blocks aremade in moulds, they are like bricks, or artificial stones, or wooden blocks, which are prepared and then brought to the place where they are to be laid and put down in the usual manner; and that, when the blocks remain in the moulds and are thus laid, they do not present a uniform wearing surface of concrete, or constitute a concrete pavement formed in detachable blocks by joints.

BRUNER'S METHODS OF INFRINGEMENT.

Bruner had himself called eight times, for the purpose, evidently, of establishing his own *innocence*. (Record pages 35, 69, 96, 108, 140, 155, 168, 197.) He has all the *repeating* qualities of the Gatling Gun—without any of its effectiveness.

Upon cross-examination, (Record p. 48) he admits that he constructed pavement so that the blocks would have individuality. This admission, unwittingly made, with other undisputed testimony, establishes the infringement.

Judge Thayer, in his opinion (Record p. 223-4) clearly and truthfully states Bruner's method of infringement as follows:

"The testimony shows beyond contradiction that the defendant for several years past has been engaged in laying concrete pavements. It is not denied that he divides his pavements into sections or blocks in the process of laying the same, and, whilst the concrete is in a plastic state, by interposing some substance such as tar paper, blue paper, sand, or thin strips of wood between the blocks.

The evidence shows that he first lays a lower course of concrete from 2½ to 4 inches in thickness; then removes the scantling forming the frame for the block, and against the edges of the concrete places paper or sand or wood to separate it from the adjoining block; then forms the adjoining block in the same manner as the first was formed, and eventually covers the lower course of concrete with an upper course of finer concrete from 1-2 to 3-4 of an inch thick, and cuts through the upper course with a trowel so as to make the joints of the upper course coincide with the joints of the lower course which are filled with the material above stated—that is to say, with paper, sand, or wood. The result of the process is a concrete pavement divided into sections, with the joints of the lower course filled with some substance, which produces a complete separation of the blocks from the base to the surface and permits them to be separately removed and to crack separately when upheaved by the frost, without necessarily injuring the adjoining blocks.

On the hearing of this case it was contended, as I understood, that the defendant only used thin wedge-shaped strips of wood to separate the various sections of the pavement. The testimony, however, tends strongly to show that strips of wood were only used by the defendant for a brief period, and that as a general rule he has separated the blocks by the use of sand packed closely against the edges of the block whilst it is in a plastic state and before the formation of the adjoining block, or by the use of some species

of paper in the place of sand, or by the use of sand and paper combined or a poor quality of concrete.

As the defendant divides a concrete pavement into blocks by the permanent interposition of sand, paper, or wood between the same, in manner last described, it is not necessary in this case to consider whether the making of a joint between the sections by a trowel, cleaver, or some sharp instrument whilst the concrete is in a plastic state (the joint being left open or unfilled) would be an infringement of the Schillinger patent."

The ingenious methods of infringement employed by Hurlbut and Bruner, as appears from the records, are strikingly similar. If their names were not different, a fair argument that they were *twins* could, readily, be made. They are so much alike in their infringing methods, business tactics and habitudes of life. The Old Maid, after a careful view of the Siamese Twins, with far less evidence, pronounced *them* brothers.

Bruner boasted that "he could go around the Schillinger Patent," (record p. 23.) To check this bold pilgrimage around the patent was one of the purposes of the injunction. He says he was familiar with a number of the decisions of the Federal Courts—touching the validity of the Schillinger patent. He had read Judge Blatchford's opinions (record p. 47). If so, he knew the patent had been held to be valid, and that infringing methods like his had been condemned by the Federal Courts. The bill in this case averred that the validity of the patent had been established in the following cases: Schillinger vs. Gunther; California Co. vs. Perine; Schillinger vs. Greenway Brewing Co.; Schillinger vs. Hurlbut, U. S. Circuit Court of Illinois. Notwithstanding all these facts this daring and wilful infringer, in utter disregard of the law, and of the rights of others, continued to "navigate" the patent until he was checked by an injunction.

TRIPLE PROFITS.

In harmony with the prayer of the bill, we ask the Court to increase the actual profits realized by Bruner to a sum equal to three times the amount, as provided by law in cases of wilful and unjust infringement. Under the U. S. Revised Statutes Section 4921—the Court has the power to inflict punitive damages. Seymour vs. McCormick, 16 Howard 489. This power should be exercised when the infringement was deliberate and intentional, even though it may have been committed under an erroneous opinion of the plaintiff's rights; Russell vs. Place, 9 Blatchford 175; Peek vs. Frame, 9 Blatchford, 194.

In the language of the decisions, this power is properly exercised in cases where a defendant acts in *bad faith*, or has been stubbornly litigous, or has caused unnecessary trouble and expense to the plaintiff; Day vs. Woodworth 13 Howard, 372; Teese vs. Huntington, 23 Howard, 2; Star Salt Caster Co. vs. Crossman, 4 Bann. & Ard., 566; Child vs. Iron Works 19 Fed. Rep. 259; Simpson vs. Davis, 22 Fed. Rep. 444.

The application of these principles can readily be applied to Bruner, whom the Courts seem to have had in mind when the opinions were written.

THE ASSIGNMENT OF ERRORS

On the part of appellant has been amended so as to read—as *it* appears in this brief. We contend that the Court erred in overruling exceptions and amended exceptions to Master's supplemental report, and in not entering a decree in favor of appellant against appellee for three times the amount of profits shown by the Master's first report to have been actually realized, as profits, by defendant.

Since the decision of the Supreme Court, in Hurlbut vs. Schillinger, *supra*, it is unnecessary to discuss the several exceptions. It is sufficient to say that the appellant is entitled to the *entire* profits realized by appellee.

We ask the Court to reverse this case, and enter a decree here in favor of Shannon, the appellant, for twenty-five thousand, four hundred and two 44-100 dollars, with all costs—against appellee, Bruner, or to reverse the case and remand it to the Circuit Court—directing the proper decree to be there entered.

The case of P. M. Bruner, appellant, vs. William Shannon, we contend should be affirmed.

Respectfully Submitted,

St. Louis, Mo.,
Oct. 1, 1892.

UPTON M. YOUNG,
ALEXANDER YOUNG and
ALBERT BLAIR,

Solicitors and Counsel for Wm. Shannon, Appellant.

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IN THE

United States Supreme Court.

PRESTON M. BRUNER,
APPELLANT AND DEFENDANT,

vs.

WILLIAM SHANNON,
APPELLEE AND COMPLAINANT.

No. 97.

BRIEF AND ARGUMENT FOR APPELLANT.

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IN THE

United States Supreme Court.

PRESTON M. BRUNER,
Appellant and Defendant,
vs.
WILLIAM SHANNON,
Appellee and Complainant.
No. 97.

BRIEF AND ARGUMENT FOR APPELLANT.

If the Court Please:—

This is an action in equity, brought by William Shannon against Preston M. Bruner, on the Schillinger re-issue patent No. 4,364, dated May 2d, 1871. The suit was brought in the Eastern Division of the Eastern District of Missouri, and a decree entered in favor of complainant by his Honor, Judge Thayer. The defendant appealed to this court, and alleges:

1st. The court below erred in finding that the defendant had infringed the patent.

2d. That the court erred in finding that the patent was valid.

3d. That the court erred in not finding that the patent was anticipated by the re-issue patent of H. P. Russ, No. 261, dated March 28th, 1854.

4th. That the court erred in not finding that the patent was anticipated by the patent issued to H. B. Steele, July 6th, 1869, No. 92,390.

5th. That the court erred in not finding that the patent was anticipated by the patent issued to Hopkins, November, 1869, No. 97,088.

6th. That the court erred in not finding that the patent was void for want of patentable invention, in view of the older art as disclosed by said patents to Russ, Steele and Hopkins.

7th. That the court erred in not dismissing complainant's bill for want of equity.

The appellant insists that he has not infringed the patent in suit when limited to tar-paper as a separating medium between the blocks, which we insist must be done to escape the prior art.

The second claim is for the blocks separated by tar-paper, it is in the following words:—

"2. The arrangement of tar-paper, or its equivalent, between adjoining blocks of concrete, substantially as set forth."

The defendant used between his block strips of wood made thus:

These strips are wedge-shape in cross-section, and they are placed with the thin edge upward, so that the blocks will be free to move when acted on by the frost in cold weather. The defendant, in testifying as to this, said (Rec., p. 38):—

Note.—The witness here produces a piece of wood which is marked "respondent's Exhibit A."

Witness: "This exhibit is the precise size of the wood. I have a bundle, and I cut this piece off. That represents the kind of wood inserted. Now, if I am allowed, I will state, here is something that was testified to by a man that was for some time a foreman; he stated that I told him when I got back from New York, that it was foolish to pay a royalty on the Schillinger patent, and that I could lay sidewalks without using that method. He had his own style of language that I didn't use, but the sentiment was correct, and why I did say that was this: When I got back I became acquainted with George H. Wehn, of Philadelphia, against whom Schillinger or his representative brought a suit, and he gave me this book to show me his defense, and in this defense he quoted a patent which gives this very language: 'No. 5,475, dated March 14, 1848, issued to Horace P. Russ.' Now, I had known this, and I thought this was sufficient to show that there was no real originality or value in Schillinger's patent, and I objected to it until I had made all these experiments, and then I came back to this, and I will tell you why I adopted this finally in preference to any kind of paper, sand or anything else. By 'this' I mean Exhibit A. This makes a joint which will allow blocks to be removed, and

nothing else will — allow them to either be removed or to move among themselves. The reason of it is this: The block is under-cut by this piece between here, and you leave a piece out and the minute you start it a least bit it is loose, and every inch or fraction of an inch that you move it it becomes still more loose. The same reason also will allow it to move. I worked this method until this spring. The only objection to it was, that it spoils the appearance of the joints on top, not the value, but the appearance of it."

From this testimony, it will be apparent why this shape strip is used.

For some time the defendant left these strips in or allowed them to remain between the blocks, but later he removed them as each block hardened and before the next was formed, and filled the spaces left by them with some poor or weak cement that would crumble as the blocks were heaved by the frost, allowing the blocks to move freely. The defendant says (Rec., p. 39):—

"I use this now. When I mold the blocks I do as all others do. I make a cheap wooden frame to form the side or guide for the edges as is described by everybody that has explained this thing, but before I put any material in I put these strips along the sides of this mold. Then, when I remove the scantling I also remove these strips instead of leaving them in as I did at first, and instead of using the wood there I put in some kind of concrete. That concrete may have lime as a cementing material; it may have clay or it may have hydraulic cement, or native, or imported, anything that will make a cheap concrete that will resist the pressure of working it, and in case the blocks do move, if they don't slip on this concrete, it will crumble in a way so the blocks will have an undercut shape, and will move among each other without any friction."

* * * * * * * * * * * *

"Instead of having a wooden strip I practically have a concrete strip."

"34 Q. Is this concrete of the same permanent nature as that of which the block is composed? A. No, sir; it is purposely of a

poorer quality of cement or lime, or whatever building material is used to make it substantially weaker than the rest of the block, so it can crumble up if there is any occasion."

"35 Q. And this is to allow one block to be removed without destroying it, and also to allow the blocks to raise independently in cold weather in case of frost? A. Yes, sir."

The strips are practically all the defendant ever used to form joints between adjacent blocks of concrete. When he first started, he used, purely as an experiment, some brown paper, but abandoned the use of it as impracticable. (Rec., p. 38).

"* * * The first few pavements that I laid I used, I think, yellow paper; I believe they call it three-ply, three coats of paper, pretty thick, over an eighth of an inch thick. My idea in doing that was this: that if it stuck fast to the block on one side, the other side of the other block, when the frost would leave, the paper in the middle would be soft, and there would always be sufficient water in that that it would ravel inside and wouldn't bind. I laid several pavements after that method, but the experiment was not satisfactory to me. The reason was this: that when you make one block the face of it is rough in proportion, that the pieces you use for the concrete are big, and when you lay the paper there against it and put the other block against it, and ram the stuff down to get it solid, the pieces will squeeze through the paper into the holes of the previous block and wedge, sort of saw-teeth fashion. I was aware of this when I made the first experiments in plastic work, because I filled the holes up with sand, so as to leave the block as smooth as possible, and I was satisfied that still it pressed the paper over into those soft hollows or else pushed the pieces clear through, and that they couldn't move as they ought to move. Next I adopted a method which I was opposed to at first, having known it a good while ago, and that method was to put in place of any kind of paper strips of wood of this shape, as was testified by my foreman. The small side of this is up."

The defendant here refers to Exhibit A.

After using this paper for a short time he abandoned the use of it, and never used it again.

The defendant never used tar-paper to form the joints between these concrete blocks, though complainant's witness (Mr. Trabel) testified that he did in front of Nugent's store, on Broadway, near Franklin avenue. As to this defendant says (Rec., p. 41):—

"22 Q. Mr. Trabel testified on the part of Mr. Shannon that, in working for you on a pavement in front of Nugent's store, on Fifth street, near Franklin avenue, that he, under your instructions, used tar-paper between the blocks. Is it true or not? A. It is not true."

"23 Q. Now, did you use any kind of paper between the blocks to form a joint in this pavement at Nugent's? A. I did; I used that yellow paper that I spoke of."

"24 Q. How did you come to use that? A. Well, I wanted to make a joint that would move up and down, and I thought that that paper, as I stated before, if it did in any way adhere to the blocks on each side of it it would yield, and the center would get rotted out, or become soft from the moisture in the ground, and it would slip up and down without much friction. When you say a block can be removed it also implies that it can move in its bed among its neighbors."

"25 Q. Did you find this paper a practical method of forming the joints? A. No, sir."

Not only have we this testimony of the defendant that he did not use the tar-paper, as testified to by Mr. Trabel, but the only other witness called by the complainant, though he worked on this Nugent pavement and on all parts of it, testified that he did not see any tar-paper used. He said (Rec., p. 31):—

"In this job of Nugent's, what was used to divide the blocks? A. To the best of my knowledge, there was a sand used and a kind of thick brown paper."

"Q. Was there any tarred paper used at Nugents? A. "*I can't say that; I don't recollect of there being any tarred paper there at all.*"

* * * * * * * * * * *

Cross-examination (Rec., p. 34):—

"Q. Did you work along with Mr. Trabel? A. Yes, sir."
"Q. During the summer of 1884? A. Yes, sir."
"Q. Did you work on any particular part of the pavement, or did you work on all parts of it? A. I was just helping him."
"Q. Whatever he told you to do? A. Yes, sir."
"Q. And you assisted him in all parts of it? A. Yes, sir."

The defendant testifies that he *never* used tarred paper in connection with concrete pavement put down plastic (Rec., p. 41.)

"21 Q. Did you ever use tar-paper to form the joint between the block put down in the plastic condition, as shown in your patent? A. To the best of my recollection I never did."

In one or two instances, when he was first starting in the paving business, he used, *as an experiment*, a small amount of tar-paper in connection with *tiling* (Rec., p. 41).

Mr. Grim, a witness who was defendant's foreman for four years nearly, testified (Rec., p. 57):—

"9 Q. Did you ever put tar-paper between the joints? A. No, sir."

"10 Q. Did you ever know of Mr. Bruner putting tar-paper between the joints? A. No, sir."

The nearest the defendant has come to using tar paper, is a short experimental use of of plain, not tarred, paper, and it is evident that this is not the equivalent of tar-paper, for the reason that it will pass water, and will not form a water-proof joint as the patent says tarred paper will do.

Besides this use of plain paper, even though it were the equivalent of tar paper, is no infringement, we submit, of the patent, for the reason of it being merely experimental.

We submit that the wood strips or the weak cement, used by the defendant, did not infringe the patent (on the ground of being the equivalent of tar paper) for they are not water-proof, nor are they pliable or flexible.

The other errors which we have alleged will be considered jointly.

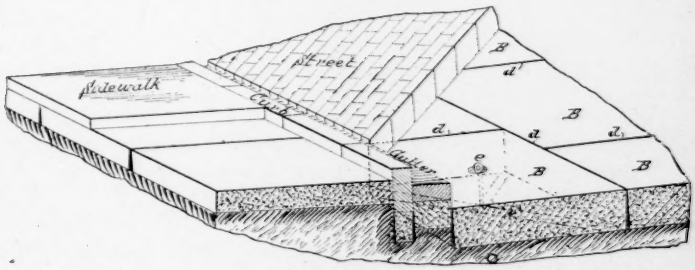
First, as to the Russ re-issue, No. 261.

The Schillinger patent, in suit, has been before the courts several times. In the case of Hurlbut *v.* Schillinger, 9 Supreme Court Reporter, 584, the several adjudications on this patent are recited. We have carefully gone over these decisions, with a view of ascertaining whether this Russ *re-issue* patent has ever been before the court as an anticipation of the Schillinger patent, and we have been unable to find, from reading the opinions, that it has.

In a number of the cases, including the Hurlbut-Schillinger case referred to, the *original* Russ patent was before the court, but as an anticipation it is not nearly so relevant as the re-issue. In fact this Russ re-issue seems to be a complete answer to the Schillinger patent, so far as concerns this appellant, for the reason that it shows and describes exactly what the appellant has done.

In the case of Gunther *v.* New York, 2 Ban. & Ard. 544, his Honor Judge Blatchford, said the defendant had failed to show how the Russ patent (it was the *Russ original patent* that was before the court, not the *Russ re-issue*) anticipated the Schillinger patent, and that it appeared that the Russ patent simply related to movable panels cast around iron frame work, and not to the whole job of concrete work. This same view was taken of the Russ patent by this court in Hurlbut *v.* Schillinger, *supra*. A careful examination, however, of the Russ *re-issue* patent, will lead to an entirely different conclusion.

We here give a perspective view of the drawing, as explained by the specification of the Russ re-issue:—



Russ Re-issue.

Concerning that portion of the street bed which is beneath the surface stones, the specification of the re-issue says on:—

"The positions of the sewers, pipes and branches are to be defined, and metal or wood frames, laid out in the manner shown by d d, thicker at the bottoms than at the tops, are to be laid down on this foundation to circumscribe a space or spaces forming a panel or panels over each sewer-pipe and branch beneath. These may be made of sound wood, though common cast-iron or iron-stone pottery, burnt earth, or any other fit material may be used for the frame-pieces in the sectional form shown in larger size in the detached Fig. 3, and placed on the graded subsoil and partial pavement. *Similar* strips or frames should be laid dividing the preparatory pavement lengthwise into strips or long bats. These bats and the frames above-mentioned are to be filled with what is now well known by the technical name of "concrete," namely, a mixture of masons' chips, broken stone, hydraulic cement, clean sand (not salt beach sand) and fresh water, in such proportions as the quality of the cement will require to form a sound foundation, B, above the subsoil, A, that will in a short time become an artificial flag or slab of rock about eight to ten inches thick to bear the pavement above; but before the mixture is placed into the panels or sections formed by the frames, d d, *these panels that may hereafter have to be lifted out for access to the parts beneath* are to

have bars of iron laid into them, forming crosses e', with holes in them, through which they are united by an eyebolt, e, with a ring in the head of each bolt, as shown in Figs. 4 and 5, and in the larger panels two or more of these sets of bars, bolts and rings may be used, while in the smaller panels one will be sufficient. The bolts employed for these purposes may be of a small extra length that will find place in the subsoil, and a countersink in the face of the concrete is to receive the ring. In this way, on applying power to raise the panel, the ring will lift clear of the face without breakage or injury to the concrete. After the concrete is filled in and consolidated, it may be lifted out of any panel or section, as may be required, by shears or derricks placed above, with tackles hooked into the rings, e e, in the panel, the inverted wedge-formed portions of the frames, d d, allowing each panel of cement to be freely lifted out and placed on one side, while access is needed to the part beneath, and receiving the panel of cement in replacement again when the access beneath is no longer needed.

"It will be readily understood, that if the surface of the subpavement were covered by one unbroken sheet of concrete several inches in thickness, water or gas from the pipes below, in case leakage should occur, could not percolate or escape through the concrete, and therefore in such case it would escape into the ground under the roadway, impairing the foundations, and into the cellars and basements along the streets, causing much injury and annoyance, but not indicating the location of the breach, so that it would often be necessary to break up or "honeycomb" a great extent of pavement to discover it; but when the strips of wood or other substance above mentioned are laid at short intervals from each other, and the concrete poured in between them, the concrete in solidifying, will shrink laterally and leave open seams through which the water or gas can immediately rise to the surface of the roadway, thus indicating almost the precise point at which the leakage has taken place.

"When the concrete dries in *the panels which are intended to be lifted out*, the contraction will leave openings at the edges and around the rods which connect the crosses with the rings, which will allow the escape of water or gas, and it is obvious that such round perforations at short distances from each other throughout the concrete foundation, and especially directly over the pipes, would indicate the points at which leakages occur; but it is obvious that so far as these indications are concerned these perforations

operate on the same principle with the seams above mentioned, and are scarcely so effectual, but both exist in my pavement.

"The great importance of the immediate penetration of the water, gas, etc., to the surface to indicate the precise location of the breach will be readily recognized, and without it the concrete foundation would scarcely be admissible in streets."

From the italicized portion of the quotation, and from the further fact that only part of the slabs or flags B are illustrated in the drawing, as provided with the crosses e', and eye-bolts e, it is, we submit, clear that in his re-issue Russ anticipated making the entire foundation of the street of artificial slabs formed *in situ* with tapering or wedge shape strips of wood or other material between the slabs.

Concerning the gutter, curb and sidewalk, Russ, in his re-issue, says:—

"*The gutter stones f, curb stones g, and flagging of the sidewalks D may all be laid on paneled and divided sections of concrete in the same manner and with the same advantages and effects.*"

This shows that Russ fully anticipated the idea of using artificial stone slabs, or flagging, formed *in situ* for the sidewalks, as well as for the street and that these slabs were to be divided by wedge shape strips of wood or other material just as the appellant made his sidewalks, and we submit that this Russ re-issue is a complete anticipation of the Schillinger patent unless it be that there was invention in using tar paper instead of wood or burnt earth, as done by Russ, a question which does not concern the apellant, for he has not used tar paper.

Russ contemplated placing natural stone flagging or slabs over the artificial flagging or slabs of the sidewalk, a very natural suggestion for a person living as Russ did, in a part of the country

where such natural stone flagging is plentiful, but had he lived in a prairie State instead of New York, he probably would not have suggested the natural stone cover, for he had a perfect sidewalk without it.

We are confident that if this Russ re-issue had been brought to the attention of this court in the earlier cases, the Schillinger patent would have met with a very different construction.

Not only does Russ anticipate Schillinger, but he makes a better sidewalk, for his wedge-shape strip will allow the flags or slabs to be moved by the frost without breaking, whereas tar paper will not do it.

The appellant testified on this point as follows (Rec., p. 45):—

"54 Q. Schillinger also states in his patent that his separators or divisions of tar paper, admits of the blocks raising independently of each other when acted on by frost in cold weather, thus affording a packing in the divisions. Is this true or not? A. *It doesn't do it*, and by drilling a hole in the *center* of any block, attaching a fastening of any kind to it and pulling at it, every man can convince himself *as many times as he tried it.*"

* * * * * * * * * * * *

"64 Q. In these pavements that you speak of, which were laid under the Schillinger patent by other parties, are more or less of the blocks cracked or broken or not? A. A great proportion of them."

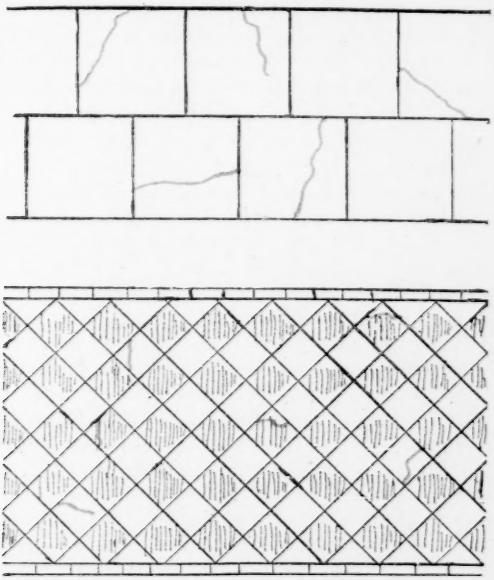
"65. Q. Can you illustrate that by a sketch on paper? A. Yes, sir."

Witness produces a paper which is marked "respondent's Exhibit D."

"Witness: In these two figures the double line represents the curb-stone; the spiral lines in the center of each figure represent the shape of the blocks as made. They show the joints of the blocks; the little red lines show how the cracks run across the blocks, which, according to my interpretation, is caused by

their yielding across their own substance, instead of yielding along the joints along which they ought to move; and I also add, that all of these blocks that are here separated, if they were individually laid out in an open field, they would not break for a century from the frost, which is to explain the common error that people have, that it is the frost itself that hurts the pavement, which is not the case."

Exhibit. D.



"Q. When you speak of their being laid out in an open field, do you mean close together, as in a pavement? A. No, sir; apart — each block by itself."

Witness, Soell (Rec., p. 52), said:—

"46 Q. Supposing you merely put down the pavement in the ordinary way under the Schillinger patent, can you go there and

move any of the blocks without cracking or breaking them? A. I could move them, but I don't think I could move them without cracking them; I think you wouldn't find one in the winter that would be whole yet."

Witness Grimm said (Rec., p. 57):—

"16 Q. Do you know whether, after a pavement has been laid in accordance with this description, that any of the blocks can be removed without destroying it? A. No; I think it would be broke each way under the Schillinger patent; the joint would break, of course, the top of the joint; can't take it out without breaking."

Street Inspector Sullivan said (Rec., p. 62):—

"7 Q. Have you ever noticed the pavement in front of Alexander's drug store, here on the corner of Broadway and Olive? A. Yes, sir."

"8 Q. What condition is that in? A. That I should consider in a very bad condition."

* * * * * * * * * * * *

"14 Q. Were you ever called upon to investigate the concrete pavements officially? A. Yes, sir."

"15 Q. What pavements did you investigate at that time? A. I investigated the pavement on Olive street, that you spoke of just now. I investigated one in front of the People's theater. I investigated one on Fourth and Clark avenue, I think it is, and one on Fifth and Elm, or rather on Fourth and Elm; one on Fifth, between Elm and Walnut streets, and one on the corner of Walnut and Fifth. That is as near as I can recollect. It has been some time ago since I was called on to investigate those sidewalks."

"16 Q. What did you report on these pavements? A. I reported that I didn't consider them proper material to be laid in a district governed by the ordinance, for I didn't consider them good sidewalks."

"17 Q. What was the reason? A. Too liable to crack and become rough on the surface."

"18 Q. Do you know by whom these pavements were laid? A. Well, no, I couldn't say by whom they were laid, except this one on Olive street, that was laid by Mr. Hull; it is Schillinger's patent, laid by Hull. That is the only one I have noticed the brand

of, but a man by the name of Zebling made application for permission to lay some sidewalks composed of material which were claimed to be similar, and claimed to lay in a similar manner, which was rejected by the board of public improvements after submitting sample of the sidewalks and examined."

"19 Q. Did you ever see any mark on these sidewalks that you speak of, stating the patent under which they were made? A. Yes, sir; this one on Olive street, that was patented July, 1870."

"20 Q. By whom? A. By Schillinger, and it was made by Hull."

Witness McKelvey said (Rec., p. 65):—

"* * * I have noticed the Schillinger patent mark in the walks in a great many sidewalks in the city."

"3 Q. State one instance of that? A. I noticed it at the Poly technic building, and noticed it up here at this Empire building, and I have seen them in various places over the city."

"4 Q. What is the condition of the sidewalk at the Polytechnic building? A. Well, it is cracked very badly next to the curb — in fact, next to some stone that was put in between the curb and building lines; stone put in there for coal holes to be put in; next to them they are cracked."

"5 Q. In your opinion, what is this cracking due to? A. It is due to the dampness when the ground freezes and when it commences to thaw, and bulges up, and it is almost equal to one continuous stone."

* * * * * * * * * * * *

Witness Schmidt, of New York, said (Rec. p. 86):—

"151 x Q. Are you familiar with the pavements laid under the Schillinger patent, with tar-paper between the blocks, as you mentioned yesterday? A. Yes, sir; I laid some that way."

"152 x Q. What I mean is, do you know of such pavements now in the city of New York laid under that patent? A. Yes; in Madison Square, and down on the Battery, Franklin Square, and here on the City Hall Park."

"153 x Q. Where is Madison Square? A. Twenty-third street and Broadway; it goes up to Twenty-fifth or Twenty-sixth street."

"154 x Q. What is the condition of this pavement? Are the blocks intact or some of them broken?"

"Objected to as wholly immaterial."

"A. A great many are cracked, and again many of them are repaired by Schillinger?"

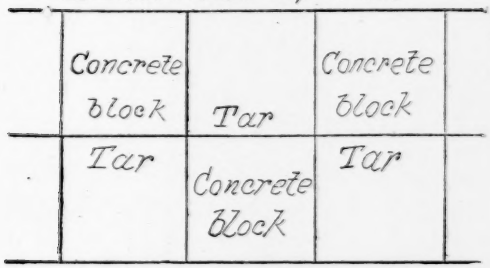
"155 x Q. Have those blocks tar-paper between them? A. Yes, sir."

From this testimony, it is evident that tar-paper will not allow the blocks to heave under the action of the frost without breaking, nor allow them to be removed separately, so that there is no utility in the patent in this respect. It is easy to see how the blocks cannot heave and move with tar paper only between them, for the composition of the blocks is coarse and grainy, and the tar-paper being soft, the grains of one block will interlock with those of its neighbor.

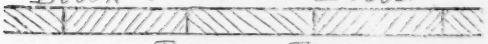
In addition to the Russ re-issue, the appellant has two other patents earlier than the Schillinger patent, *neither one of which appears to have been before any court as an anticipation of the Schillinger patent.*

The patent to F. N. Hopkins, November, 1869, defendant's Exhibit 3, describes putting down blocks of concrete with *tar itself* between the blocks. With this tar he mixes Albertite or Ritchie, or both, which correspond to the paper in the Schillinger patent. We here give an illustration of this exhibit:—

Exhibit. 3. Top View



Block Section Block



He says: "For paving or street purposes, it may be spread upon the surface and rolled compactly by heavy rollers, or it may be molded into blocks, under pressure, of any desired shape or size." * * * "*The bricks or blocks may be laid in a solid state and cemented together by a mixture of pine tar and Ritchie mineral, or Albertite, either or both of the latter combined.*" * * *

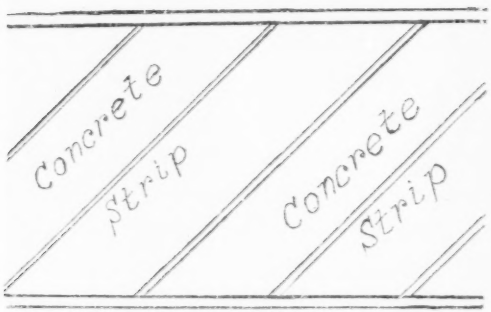
We thus find that, prior to the time the Schillinger patent was applied for, that not only was it old to put concrete down in blocks, but it was old to put tar, mixed with a body, between the blocks.

This exhibit alone seems to be a complete answer to the patent. It forms water-proof joints between the blocks just as much or more than tar paper, and as the tar paper does not allow the blocks to heave and be removed separately, the patent has no advantage in this respect.

The patent of Steele, dated July, 1869, defendant's Exhibit 5, describes putting down concrete on a bed of gravel and forming

the concrete into blocks by strips, which are placed diagonally across the walk.

Exhibit 5.



In his specification he says:—

"I then place diagonally across the bed of stone or gravel, *thin, narrow strips of wood*, so that they will be embedded in the concrete, and which will firmly bind and *prevent it from cracking*, which has hitherto proved a great source of trouble in laying concrete pavements."

Neither the Hopkins nor the Steele patent was before this court in Hurlbut *v.* Schillinger.

We respectfully submit that the decree of the lower court should be reversed.

GEO. H. KNIGHT,
Solicitor for Appellant.

F. N. JUDSON,
Of Counsel.

St. Louis, Mo., November, 1892.

Office Supreme Court U. S.
FILED.
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JAMES H. McKENNEY,
CLERK.

IN THE

Supreme Court of the United States.

OCTOBER TERM, 1892.

WILLIAM SHANNON, APPELLANT,

vs.

PRESTON M. BRUNER, APPELLEE.

Term No. 96.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF MISSOURI.

Appellee

STATEMENT AND BRIEF FOR APPELLANT.

FREDERICK N. JUDSON,
WITH WHOM IS GEO. H. KNIGHT,
For Appellee.

Nixon-Jones Printing Co., 215 Pine Street, St. Louis.

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STATEMENT AND BRIEF FOR APPELLEE.

STATEMENT.

This with case No. 97 are cross-appeals from the Circuit Court of the United States for the Eastern District of Missouri.

The suit was brought in equity by appellant as assignee, for city and county of St. Louis, of John J. Schillinger, the patentee, for alleged infringement of re-issue letters patent No. 4364 for "improvement in concrete pavements."

The Circuit Court held in its interlocutory decree (Rec., p. 103), (opinion on interlocutory hearing, Rec., p. 222), (33 Fed. Rep. 290) that the patent was valid, and that the defendant had infringed and awarded an injunction and an accounting. The master, after hearing on accounting, reported nominal profits only, and this was affirmed by the court in its final decree. The patent sued on expired before the entry of the final decree. (Rec., p. 219.)

From so much of the decree below as affirmed the validity of the patent sued on, and the infringment by defendant, appeal was taken to this court by defendant. (See brief filed for appellant in case No. 97, and complainant appealed from the refusal of the court below to sustain his exceptions to the master's report. This brief will be confined to a consideration of the questions raised in this latter appeal.

As preliminary to this consideration it is necessary to refer to the construction given by the court below to the claims of the patent in suit adjudged to have been infringed by the appellee. These claims are as follows: —

1st. A concrete pavement laid in detached blocks, or sections, substantially in the manner shown or described.

2d. The arrangement of tar paper, or its equivalent, between the adjoining blocks of concrete, substantially as, and for the purpose set forth.

The re-issued patent, as issued, apparently included in the specification and first claim, blocks formed from plastic material without interposing anything between their joints while in process of formation, the blocks being formed by the incidental shrinking in setting (Supp. Rec., p. 6).

Thus the specification after describing the laying of the successive blocks (Supp. Rec., p. 6), proceeds as follows: —

"And since the concrete in setting, shrinks the "second block when set, does not adhere to the first, and "so on; and when the pavement is completed, each block "can be taken up independent of the adjoining blocks."

And also (Supp. Rec., p. 7), after describing the use of *tar paper* as a water-proof separating material between the blocks, proceeds: —

"In such cases, however, where cheapness is an object, "the tar paper may be omitted and the blocks formed "without interposing anything between their joints, as "previously described. In this latter case the joints soon "fill up with sand or dust and the pavement is rendered "sufficiently tight for many purposes, while the blocks "are detached from each other and can be taken up and "relaid, each independent of the adjoining blocks."

By his disclaimer, entered March 1st, 1875 (Rec., p. 2), the patentee disclaimed all the words quoted above, stating that he "hereby disclaims the *forming of blocks* from "*plastic material without interposing anything between* "*their joints while in the process of formation.*"

(For copy of specification of re-issue, with disclaimed portion indicated by brackets, see statement of case in Hurlburt *v.* Schillinger, 130 U. S. 459, 463).

It appeared in evidence that prior to the interlocutory decree as is fully set forth in the brief filed in No. 97, defendant used *wedge-shaped* strips of wood or wedge-shaped masses of weak cement, as a separating material between the blocks, being as he claimed and as is fully discussed in brief No. 97, the method of concrete block forming shown in the re-issue patent of Russ of 1854. It was claimed by appellee, defendant below, and his evidence tended to show,

that this peculiar *wedge-shape*, with small end upwards, constituted all the material value to the pavement in the strips, as it secured beveled blocks, smaller at bottom than at top, and by preventing interlocking, enabled the blocks to move freely, and that this result could not be produced by the use of *tar paper* as specified in the patent at all, nor by the use of *any material not of the wedge shape* (Rec., pp. 38, 39 and 41).

It does not appear from the interlocutory decree whether both, or if one, which one of the claims of the re-issue patent were adjudged to be infringed.

But the court below held that the patent was not anticipated by the Russ re-issue or any of the prior patents relied on, and feeling itself concluded by the language of this court in the Shalicke case (119 U. S. 404), construed the patent to include any separating material introduced between the blocks in process of formation, that is, that *any* separating material, so interposed, was the equivalent of the *tar paper* of the patent.

The correctness of this construction, in the light of the new evidence as to the state of the art, not considered in the prior adjudications, is discussed in case No. 97; but it is referred to here, as indicating the lines upon which the accounting proceeded in the Circuit Court.

Before the master, there was *no evidence* of a license fee or of any damages sustained by complainant; nor was there any claim made for *damages* as such. It appeared in evidence that complainant had purchased his right in the patent for city and county of St. Louis for sum of $200.00 (Rec., p. 150).

As to profits, defendant admitted that he had manufactured some 75,000 square feet of pavement with a temporary or permanent interposition of *something*, *i. e.*, the *wedge-shaped Russ* device, and the master reported that his business or manufacturer's profit in this was 11 29-100

cents per square foot. On this point, however, the master made an obvious miscalculation (which the appellee had no opportunity to correct, the ultimate finding being in his favor), there being no evidence on this point except that of defendant, and he gave the manufacturer's profit at *five* cents per square foot (Rec., p. 133).

There was no evidence offered by complainant showing or tending to show, or from which any inference could be drawn, as to the amount of defendant's business profit which was attributable to the Schillinger device, as distinguished from the improved form of separating material used by appellee. Any question as to the *burden of proof* on this matter, however, was rendered immaterial by the fact that appellee, defendant below, gave testimony to the effect that *all* the substantial benefit derived by him from the use of a separating material was due to the Russ or wedge-shaped form of that material, and that without this wedge-shaped device, with small end on top, so as to make blocks smaller at bottom, the separating of blocks by separating material (under Schillinger patent as construed) was of no practical benefit (Rec., p. 138). Thus witness says (Rec., p. 158) :—

"It is not the separating medium I want. It is the beveled joint I want because that has a value that nothing else has." See also testimony taken before interlocutory hearing (Rec., pp. 38, 42, 44, 46).

On page 46 witness Bruner being asked why he used a separating material, said:—

A. "Because I want that *shape*. The undercut shape in the blocks." Q. "What is the object to be sought, to permit what?" A. "To permit them on account of that to move, to give individuality."

And on page 45, witness testified that it is impossible to effect this result under the patent; that is, without the *wedge shape*.

Besides this testimony, defendant offered full and detailed evidence based upon actual experience as to *other methods* of *laying concrete pavements open to him at the time*.

One of these was the method specifically disclaimed by the patentee (see Schillinger *v.* Schaliche, 119 U S. 401) without *any* separating material, permanent or temporary, between the blocks, one block being laid immediately against the other, and the only "joint being that made by the shrinking of the concrete in setting, as described by the patentee in his disclaimer. After the pavement was laid, an ornamental groove 3-16 to 3-8 of an inch in depth was chiseled in the *hardened* concrete on the line of the natural joint (Rec., pp. 133–7). The cost of the pavement was substantially the same as that of the patent, the expense of the grooving being balanced by the saving in the separating strips (Rec., pp. 134–5). It was shown from an experience of six or seven years (Rec., p. 137) that the pavement made by this process was as satisfactory in all respects as the Schillinger. It was conceded, however (Rec., p. 138), that there was an advantage in using the *wedge-shaped strip* and the resulting beveled block. Mr. Bruner testified (Rec., p. 142–3):—

"I admit that my way is not as satisfactory to me now "as if the blocks were beveled, but they are as good as the "Schillinger method of putting in tar paper. The blocks "will move and I have some of the best pavement in the "city made in that way, but theoretically, I don't consider "it as good as the beveled blocks which Russ showed "plainly how to make." (See testimony of Mr. O'Toole, "Rec., p. 152, and Mr. Johnson, Rec., p. 154.)

Another method also open at the time, also covered by the disclaimer, was that of laying the pavement in *alternate blocks* and then, after these hardened more or less, laying the intermediate blocks without *any separating material*, permanent or temporary, the shrinking in setting of the plastic concrete making a natural joint (Rec., p. 156), in the precise method disclaimed by the patentee.

A third method, also open at the time, and fully explained by the testimony, was that of making the blocks in some other place and bringing them to the place of laying, when hardened (Rec., p. 156). Also see testimony of Mr. McKelvey (Rec., pp. 160–3). It was shown that a satsatisfactory concrete pavement in blocks could be and was laid in this way for substantially the same price, as the pavement laid in the plastic state on the ground where used; that the blocks could be molded in the desired form with smooth beveled joints. and that the cost of transporting and laying would not exceed the extra cost of manufacturing and laying on the premises (Rec., pp. 155–162).

The evidence also tended to show that there was no demand for any specific way of making a pavement. "The people pay for a walk, not for the method of doing it. If you can lay a walk and be responsible for it, they will pay you for your doing that work" (Rec., p. 158).

The only evidence offered by complainant before the master in reply to the above, was an effort to show in a general way the average prices of labor and material, and average cost of laying the pavement (Rec., pp. 139–40) and opinions that pavement in continuous sheet would crack (Rec., p. 148), and estimate of complainant himself that a pavement without the Schillinger improvement wasn't worth half the amount of one with it (Rec., p. 149).

The accounting being submitted to the master, he reported (Rec., pp. 104–107) that he could not find any i l ence upon which he could reach a satisfactory conclu-

sion as to the amount of profits chargeable against defendant for the use of the patented improvement, and he therefore found that complainant had sustained only nominal damages.

The master having sustained objections to certain questions, complainant filed exceptions to his report *on this ground* alone asking that the matter be re-referred to the master with directions to ascertain what *part of the total profits* made by defendant was due to the use of the patented improvement.

Up to this time no claim was made by appellant of any right to recover the *entire* manufacturer's profit (Rec., pp. 164–165).

The exceptions to the master's report were sustained on the ground that too rigid a rule had been applied in the exclusion of testimony and the case was again referred to the master. Another protracted hearing before the master followed (see testimony, Rec., pp. 168–213) and singularly enough, the complainant did not see proper to ask again the questions for the exclusion of which his exceptions had been sustained. To quote from the supplementary report of the master (Rec., p. 166): —

"Accordingly the case has been further heard. *I have* "*admitted all the evidence offered. I have allowed the* "*complainant the utmost latitude. He has renewed none* "*of the questions which were excluded upon the former* "*hearing.*"

On the rehearing it was shown that the price of concrete or granitoid pavement, as it was called, varied, when made from the ingredients customarily used by defendant, from 25 to 30 cents a square foot, but that there was no fixed price, as there was great range of price in the ingredients in the composition (Rep., p. 172), and that there was no

distinct market price for pavements made in any particular method (Rec., p. 171). Thus, on page 171:—

"35 x Q. Now you have at different times separated these pavements into blocks, in the different methods which have been mentioned in the testimony heretofore given, have you not?" A. "Yes, sir."

"36 x Q. Now state whether or not there has been any difference in prices of such pavements in city of St. Louis according as you separated it into blocks by one or another of the several four different methods which have been described in the testimony given in this case, that is whether between one or the other method there has been any difference in the price in St. Louis? "A. There never has been any. Never made any arrangement about how I should divide my pavements or what method I shall use."

"37 x Q. Have you ever had any preference expressed by your customers for one method over another method? "A. I have not. They generally think that I know what I am about and let me have my own way as long as I guarantee to make a satisfactory product (see also Lamb, witness of complainant, Rec., p. 184).

Testimony was offered by complainant (Rec., pp. 171–193) which was summarized by the master in his supplemental report as follows (Rec., p. 166):—

"He, complainant, has proceeded in the latter hearing "on the theory that a pavement laid on the plan of Schil- "linger will not crack, but that one laid upon another plan "will crack, and that a cracked pavement is worth less "than a perfect one, the difference in value per foot, as "applied to all the pavement laid by the respondent down "to the time of the injunction, some 75,000 feet, is the "true criterion of damage."

This is well illustrated by Mr. Shannon, the complainant, a witness on his own behalf (Rec., p. 189): —

stance was more yielding than the cement, its interposition would not prevent interlocking in the slightest degree, if the tamping or ramming was hard enough to press the plastic material into the adjoining block.

It was shown, however, that there was nothing in the "interlocking" idea, as the hard ramming was wholly unnecessary for forming a solid block (Rec., p. 201).

Defendant offered additional testimony, based upon actual experience, as to the practicability of the other methods of laying the pavement open to him. See testimony of Mr. Sullivan, inspector of sidewalks of the city (Rec., pp. 193–197) and Mr. Bruner (Rec., pp. 197–203).

The case being a second time submitted to the master, Ex-Judge Krum, he reported again to the court, awarding nominal damages only (see supplementary report of the master Rec., pp. 160–167). After reciting as in part already quoted, the report proceeds (p. 167):—

"I have, however, carefully reviewed the evidence to see, if possible, where the respondent has realized profit attributable to the use of the patent, but I have been unable to arrive at a conclusion which will afford the complainant substantial damages."

"To insert tar paper between the blocks of concrete in the course of their manufacture is merely to create a joint. This joint can be made, according to the evidence before me, by omitting the tar paper. How the pavement is to be constructed does not seem to enter into the consideration of the owners who contract for the pavement. The contractor guarantees to lay one which will not crack. Prior to the injunction, the respondent had open to him and he might have used any of the methods other than the Schillinger method which the evidence shows were open to us. He might have laid the pavement in alternate blocks. He might have laid the blocks in immediate succession and marked apparent joints across the pavement after its completion. In either way

he would have produced a pavement with joints, which, as far as I can see from the evidence, would have been as good as that produced under the patent; at least as far as concerns the element of joints. I do not understand that the insertion of tar paper or other substance in the joints of the pavement alone gives such pavement its value or usefulness. No one, *in the light of the evidence before me*, can reach such a result. It is not such an advantage over other methods open to the respondent as ought to give to the complainant the right to receive the profits of laying the entire pavement. Therefore the measure of recovery must be limited to the benefits which the respondent enjoyed from the use of the patented improvement. No license fee has been shown by which a rule of recovery might have been secured. No contract with special reference to the use of the improvement has been shown to have been made by the respondent with any customer. The use of the pavement is not shown to have been limited to any particular locality. The use was and is general and is confined to no exceptional district. With the improvement the pavement costs neither more nor less than it does without such improvement; at least the difference is not appreciable.

In the light of these features of the case, I can not reach the conclusion that ground has been afforded me for recommending an award of substantial damages. Hence I recommend that the complaiant be adjudged nominal damages and no more."

To this supplementary report, filed December 17, 1887, complainant filed exceptions (Rec., pp. 214–15), and then filed on January 15th, 1888, his amended exceptions and in these latter, for the first time, so far as the record discloses, appellant asserted his claim to the entire manufacturer's profit of defendant.

The amended exceptions are five in number and are thus summarized in the opinion of the Circuit Court (Judge Thayer) (Rec., p. 225, 33 Fed. Rep. 871):—

"* * * Complainant has taken five exceptions to the report, but practically there are only two grounds of objection specified in the complaint, and they may be conveniently and substantially stated as follows:—

First. The patent involved in the re-issued Schillinger patent No. 4,364, and "relates to a concrete pavement * * * laid in sections, so that each section can be taken up and relaid without disturbing the adjoining sections."

The master held that for the infringement complained of, the defendant was not liable to the patentee for the entire profit realized on those jobs in which the device covered by the patent had been used, but only for such portion of profit as was clearly traceable to the use of the patented device or process.

To such ruling the complainant excepts, and insists that he is entitled to the entire manufacturer's profit, which in this case amounts to over $8,000.

Second. He insists that if his first position is untenable, that is to say, if he is compelled to accept such portion of defendant's business profit as is clearly traceable to the use of the patented device, that there is evidence in the case showing what such profit was, and warranting a decree for a substantial amount. * * *"

The exceptions were overruled by the court in a careful review of the evidence (Rec., p. 225, Fed. Rep.), concluding as follows: —

"I have carefully examined all the testimony, however, "and I have failed to find anything to warrant me in saying that they are positive advantages by which the "defendant realized a substantial profit; much less have I "been able to find any testimony to enable me to make "a definite estimate of the amount of such profit."

The patent sued on, having expired, pending the accounting, final decree was entered, and nominal damages (Rec., p. 219) and costs up to date of interlocutory decree, were awarded against defendant, and costs of reference were taxed against complainant.

Appeals were taken by both parties.

BRIEF.

The only question for consideration on this appeal is whether under the specifications of error filed by appellant, the court below erred in overruling the exceptions to the master's final report.

This question must be determined in the light of the repeated decisions of this court as to the weight which must be given to the conclusions of the master from evidence upon issues of fact submitted to him for determination. Although Section 1011 of the Revised Statutes, which prohibits this court from reversing any case for error in fact, is made directly applicable to actions at law coming up on writs of error, the principle enunciated in the statute has been repeatedly applied to the findings of a master of the ultimated facts involved in an accounting from the conflicting evidentiary facts submitted to him. Thus it was said by Marshall, C. J., in Harding *v.* Harding (11 Wheat.):—

"It may be observed generally that it is not the province "of the court to investigate items of an account. The "report of the master is received as true when no excep- "tions are taken and the exceptions are to be regarded so "far only as they are supported by the special statements "of the master or by evidence which ought to be brought "before the court by reference to the particular testi- "mony on which the exceptor relies. Were it otherwise, "were the court to look into the immense mass of testi- "mony allowed before the commissioner, the reference to "him would be of little value. Such testimony, indeed, "need not be reported further than it is relied on to sup- "port, explain or oppose a particular exception."

In Story *v.* Livingstone, 13 Peters, 356, it was held that strictly in chancery practice no exceptions to the master's report can be made, which were not taken before the master. The object being to save time, and to give him an opportunity to correct his errors and reconsider his opinion, and that a party neglecting to bring such exceptions could not afterwards except to the report, unless the court on motion should see reason to be dissatisfied with the report, and refer it to the master for review with liberty to the party to take exceptions to it, and that if exceptions were not restricted to this course, they must state article by article the parts excepted to, and that such exceptions were in the nature of *special demurrers*, and the party objecting must point out the error, otherwise the parts not excepted to will be taken as admitted.

In McMicken *v.* Perrin, 18 How. 507, the court says:

"In Story *v.* Livingstone, 13 Pet. 359, this court decided "that no objections to the master's report can be made "which were not taken before the master, the object be- "ing to save time and give him an opportunity to correct "his errors and reconsider his opinion."

This case was cited in City of Memphis *v.* Brown, 20 Wall. 322, the court saying, p. 322: "No exception was "taken to the order of reference. *No exception was taken* "*before the matter*. All the evidence was presented that was desired by either party."

In the recent case of Topliff *v.* Topliff, 12 Sup. Court Reporter, 825, decided at the last term, which is closely analogous to the case at bar in that a *first* report was filed by the master, which was set aside upon other grounds, the court affirms the doctrine of Story *v.* Livingstone and McMicken *v.* Perrin, saying that in the former case, "it was "held by the court that proper practice in chancery re-

"quires that no exceptions to the master's report be made "which were not taken before the master, the object being "to save time and give him an opportunity to correct his "errors or reconsider his opinion, and says further, as to "the error alleged, there is nothing in this case to indi- "cate that this point was ever made before the master, nor "is it noticed in the eight exceptions taken to the *first re-* "*port* which was set aside upon other grounds, or as al- "ready observed in the exceptions to his final report."

In the case at bar, the first report of the master (Rec., p. 104) awarded only nominal damages but the exceptions filed by appellant (Rec., p. 164–165) related solely to the exclusion of certain testimony offered by appellant at the hearing. This was the sole error complained of, and he prayed the court to re-refer the case, so that the master (presumably by receiving the excluded testimony) should determine *what part of the manufacturer's profit* was due to the patented improvement.

On the re-reference granted at the application, this *excluded testimony was not again offered. All the testimony offered by the appellant was admitted*, even the wildest surmises, guesses and assumptions. *No objection* was taken to any testimony offered by appellee. At the close of the testimony the case was submitted by *both* parties. Presumably, therefore, appellant submitted to the master all the testimony which he had, and he conceeded, not objecting thereto that all the testimony offered by appellee before the master was admissible and proper. Neither the exceptions, nor the amended exceptions to the amended report, which upon any theory include all the possible specifications of error which can be made in this court, make any exception to the action of the master in the admission of testimony.

There is *no exception* made either before the master nor in the court below, as to any ruling of the master as to *the burden of proof* in any part of the case or on any question

arising on the accounting, as was pointed out by Judge Thayer in his opinion (Rec., p. 227), and it therefore follows that no such question can be considered in this court.

Waiving the question, then, whether under strict practice the specifications of error can be considered *at all*, it necessarily follows that they must be limited at the utmost to the precise questions raised in the lower court by the exceptions to the supplemental report; and these will be found to be simply objections to the master's conclusions on the *weight of evidence*, that is, to his findings of the ultimate facts from conflicting evidentiary facts.

But it is settled by repeated decisions of this court that even where the proper practice is pursued in the filing of exceptions to the master's report that the "conclusions of "the master depending on the hearing of conflicting testi- "mony have every presumption in their favor and are not "to be set aside or modified unless there clearly appears to "have been error or mistake on his part."

Tilghman *v.* Proctor, 125 U. S. 149;
Callaghan *v.* Meyers, 128 U. S. 666;
Boesch *v.* Graff, 133 U. S. 705;
Crawford *v.* Neil, 144 U. S. 585, 596.

It was said in this latter case that the master's finding of fact and conclusions of law concurred in by the court after a review of the evidence, are to be taken as *presumptively correct* and unless some obvious error has intervened in the application of the law, or some serious or important mistake has been made in the consideration of the evidence, the decree should be permitted to stand. This doctrine has been so clearly established by the decisions of this court that it is needless to make citation from the numerous decisions of the Circuit Court as to the effect to be

given to the conclusions of the master upon controverted questions of fact.

It was said in Medsker *v.* Bonebreak, 108 U. S. 72, that "The findings of the master are *prima facie* correct. Only such matters of law and fact, as are brought before the court by exception are to be considered, and the burden of sustaining such exceptions is upon the excepting party." In this case the Circuit Court sustained the exceptions to the master's report, but the Supreme Court reversed the case and directed a decree in accordance with the findings of the master.

II.

The contention of the appellant that the Circuit Court and the master committed reversible error in refusing to allow appellant the entire manufacturer's profit of appellee notwithstanding the testimony as to pavements of other kinds, is wholly untenable.

This claim of appellant is doubtless based upon the decision of this court in Hurlbut *v.* Schillinger, 130 U. S. 456, where the decree of the lower court affirming the report of the master allowing the entire profit of 4c. per square foot in that case, was affirmed by this court. Under the record in that case and the established rules above set forth as to the weight to be given to the master's report affirmed by the Circuit Court, it is difficult to see how this court could have done otherwise. In that case the master reported that sum as the "*profit of defendant from pavement laid by use of complainant's patent.*" It does not appear that *any evidence* of the character offered in this case on the accounting, was offered in that. The master's conclusion in that case, therefore, was a conclusion of fact, upon the testimony, and was entitled to precisely the same

presumptions to which the master's report is entitled in this case.

The position of the appellant involves an entire misconception of the effect of an adjudication against other parties in litigation upon the same patent. It was held by this court in Bishoff *v.* Wethered, 9 Wall, 372, upon grave consideration, agreeing with a prior conclusion of the House of Lords, on the same question, that even upon an issue of the invalidity of an invention, the comparison of documents belongs to the province of *evidence* and not to that of *construction*, and in an action at law upon a patent, it was for the jury and not the court to determine whether a prior publication described the same invention and that it is not a question of judicial comparison of two documents, but of determining from evidence the character of inventions therein described. It therefore follows that as a decision upon the question of the invalidity of a patent or even infringement (whatever its force upon interlocutory motions) is not binding upon one not a party to the litigation upon even the *same state of facts*, *a fortiori* a decision upon one state of facts against one party, can have no weight in the decision of an action against a different party in the same patent upon a different state of facts.

This distinction will be of importance in the other branch of this case, where it will be shown that on the issue of the *validity of the patent*, or on the question of the construction of the patent, — which of course, depends upon evidence of the state of the art brought before the Court, — that evidence as to the state of the art is presented *in this case*, which was not presented in Hurlbut *v.* Schillinger, nor, as we are advised, in any of the prior adjudications against other parties.

But on the question involved in this appeal, where the sole issue is the correctness of the findings of facts in evidence, the finding of the master in Chicago, in Hurlbut *v.*

Schillinger, upon the facts in that case which the parties saw fit to submit to him, is wholly *res inter alios acta*. "It involves a misconception of the fundamental theory upon which adjudications in patent cases proceed, to say that the court decided in *that* case as a *proposition of law*, that an infringer of the Schillinger patent must pay all his business profits. The court decided nothing of the sort, nor could it make such a decision. It decided in that case all it could decide, "that *in view of the testimony in the case*, the Circuit "Court acted properly in confirming the report of the "master." In that case the Circuit Court acted *in view of the testimony*, which is precisely what it did in this case.

But we need not stop here. The rule applied in Hurlbut *v.* Schillinger in view of the testimony in the case, is that of Elizabeth *v.* Nicholson Pavement Company, 97 U. S. 126. There it was held, that *under the facts in evidence*, the infringer of the Nicholson pavement patent was liable for his entire profits, and it is claimed that this case established a rule for ascertaining profits, in patent suits, which under Hurlbut *v.* Schillinger entitles appellant to the manufacturer's profits in *this* case.

But this position involves a misconception of what was actually decided in Elizabeth *v.* Pavement Company. The manufacturer's profits were awarded in that case because, *first*, under the *facts in evidence* the Nicholson pavement was a "complete thing consisting of a combination of elements," and *second*, there was a *failure in that case to show that any other element contributed to those profits*, and it was on *account of this failure* that the profits were allowed. Indeed, a deduction was made in the amount of the decree of $14,000.00 for royalties paid by defendant for the use of other patents. The opinion in Elizabeth *v.* Pavement Company expressly decides the very point upon which the decree of the lower court in the case at bar proceeded, that only those profits can be recovered which can

be proved to have resulted from the use of the patented invention, the court saying (p. 139,) in its general summary of the principles governing the investigation of profits in patent cases recoverable by the patentee:—

"On the contrary, *though the defendant's business be "ever so profitable*, if the use of the invention has not "contributed to the profits, none can be recovered. The "same result would seem to follow where it is impossible "to show the profitable effect of using the invention upon "the business results of the party infringing. It may be "added that where no profits are shown to have accrued, a "court of equity cannot give a decree for profits by way "of damages as a punishment for the infringement."

But the court held under the evidence, that as the Nicholson pavement was a complete thing, it was for the defendants to show that any addition made by them contributed to the profits, but *as none was shown*, the entire profits were given.

It is true that the court held that the burden of proof was upon the defendant in such case, where the evidence showed the complainant's patent to be a complete thing, to show that the profits were derived from another source. It is wholly immaterial to consider whether this rule has been adhered to in later decisions of the court, because, as already pointed out, no exception was made in the case at bar to the suggestion of the master on this matter in his first report, and, therefore, the question is not open in this court upon this appeal.

But even if the question of the burden of proof was open in this case the question would be wholly immaterial under the facts in evidence; as in *fact this appellee did take the burden of proof*, and did affirmatively show precisely what the court on Elizabeth *v.* Pavement Co., said he ought to prove, to wit: that his

profits were derived *not from patent in suit*, but from the *improved Russ device* which was open to him and the public to use. "He thus offered exactly the evidence which he had a right to offer, and upon this evidence, thus introduced strictly upon the lines of that decision, *no exceptions being taken to any of it*, the master decided as a conclusion of fact as the circuit court did also after a careful review of the evidence that no part of his profits could be fixed as due to complainant's patent,—and it is wholly immaterial under the decision refered to that the master found that it was *impossible to determine the amount of profits*, as it is expressly held in the opinion quoted that the "*same result of nominal damages* must follow, where it is impossible to "show the profitable effect of using the invention upon the "business results of the party infringing."

III.

But this line of reasoning may be carried a step further. The determination of the court in any given case of the nature of an invention, that is, whether it constituted a "complete and entire thing," as the Nicholson pavement, is obviously not a question *of legal construction*, but a judgment *upon evidence* as to the state of the art submitted to the court by the parties in the specific case, in which that judgment was rendered, in connection, of course, with facts of which the court can take judicial cognizance. But in any event, it is a judgment upon evidence. The judgment of the circuit court in the case at bar as to the nature of the Schillinger invention, that it was *an improvement* upon a pavement already in common use which any one might lay, and not a new combination or new pavement in the sense in which the Nicholson pavement was a new pavement (see opinion of the court, Rec., pp. 226–7) was a judgment *upon the evidence* which the *parties*

saw fit to submit in this case, and was not and could not have been a judgment upon evidence submitted by any other parties in any other case. In like manner the judgment of the Circuit Court of the Northern District of Illinois in Hurlbut *v.* Schillinger was necessarily made upon the evidence in that case. Subject, of course, to the general rule, that in any case, as in Brown *v.* Piper, 91 U. S., that the court may take judicial notice of facts of common knowledge, the parties to a patent litigation must determine upon their own responsibility what evidence they will submit to the court or jury, which tries the fact, as to the extent and scope of the invention in the light of the state of the art,— and by the evidence thus introduced by the parties their rights must be determined. The essential nature of this underlying principle is not affected by the fact that in an equity suit all the issues of fact are determined by the court, instead of a jury as in an action at law.

IV.

But even if we adopt the rule of Elizabeth *v.* Pavement Company to the fullest extent under the specifications of error and look behind the report of the master to the evidence upon which it is based, the conclusions of the master and the judgment of the court thereon were not only warranted, but compelled by the evidence.

The first amended exception of appellant to the supplemental report of the master, which insists that the "Schillinger pavement is a complete and entire invention, and is "not in any way related to the several methods and pave- "ments set up in the evidence and that the master not- "withstanding the testimony as to pavements of other "kinds ought to have awarded to complainant the entire "profits of appellee," will doubtless be the main speci-

fication of error relied on. But assuming that this point is properly before the court upon this appeal, the very statement of this exception involves a misconception of the law. The appellee in introducing evidence as to the extent to which his profits were attributable to other devices and processes, proceeded strictly within the line laid down by this court in Elizabeth *v.* Pavement Co., *supra*. The extent and degree of the relation of these different processes was a matter of *evidence*.

The suggestion that appellant's patent was of such a character as to preclude appellee from offering evidence to show that his profits while using that invention were attributable to another and different cause, is certainly a very novel proposition, and the patent, if this position is correct, is a very extraordinary one.

As seen from the foregoing statement the circuit court in its interlocutory decree adopted a broad construction of the patent, and held that the Russ re-issue device of *wedge-shaped* strips used by defendant was an infringement, that is, that this device, though an improvement upon plaintiff's conception, none the less embodied it. Assuming this ruling of the circuit court to have been correct, as we are bound to do for the purposes of this appeal, it none the less followed that in an accounting for the profits realized by him from the use of appellant's patent appellee was entitled to show, if he could, that his profits were due in part or wholly to the use of the improved device of the wedge-shaped form. This is precisely what this court decided in Elizabeth *v.* Pavement Company. Indeed, that case is strictly analogous to this, in that the strips used by defendants there (p. 137) were of a peculiar beveled shape, the extra width of the strip there being at the top instead of at the bottom, as in the case at bar, and the court held that if this *peculiar form* performed an additional office from that in Nicholson's patent, *that might be an improvement*

on the patent though included in it. The difficulty in that case was that there was a failure to show that the profits were due to this improvement. But the appellee in the case at bar, supplied exactly the testimony which was wanting in that case. The question of the burden of proof (even if otherwise open for review) was rendered wholly immaterial, in that he offered evidence, based upon actual experience of years, showing that the entire advantage of the strip were due to this improved form (Rec., pp. 45, 158, 159).

It is true that appellee insisted in the court below and still insists that the re-issue Russ patent, from which he obtained this idea of the wedge-shaped strip, anticipates the patent in suit, or least compels the limiting of its construction to the peculiar kind in separating material described and claimed in the specifications, and he still so insists as appellant in case No. 97 in this court. But even if that position under the new evidence in this record is not sustained; he is none the less entitled to insist that this wedge shaped device was an *improvement*, and that the profits of his business were due to that improvement and to nothing else. To this evidence upon the part of the appellee, there was really no answer upon the part of appellant, and the master could not have found otherwise than he did find upon the evidence, that it was impossible to determine from the evidence what part of the appellee's profits were due to the patented improvement.

V.

But wholly apart from the foregoing consideration, under the familiar doctrine of the comparison of the patented method with other methods open at the time, it was impossible for the master to find otherwise than he did find

from the evidence. This appears to have been the first case under this patent in which under an accounting for profits, the processes of making concrete pavements with natural joints, under the process distinctly disclaimed by the patentee, was demonstrated by the evidence.

(See California Pavement Co. *v.* Schalicke, 119 U. S. 404.)

That a pavement with joints formed not by the use of any temporary or permanent separating material, but by the natural setting and shrinking of the concrete whether laid in successive or alternate blocks, is not within the patent disclaimed is clear. It was demonstrated by the evidence that this method did make a pavement with blocks and a satisfactory and durable pavement, and that the cracking would be controlled by these natural joints. On this question, it was not a matter of the weight of evidence, as the evidence was all one way and the master could not have found otherwise than he did find on this point.

One of these methods that under the disclaimer, natural joints, received by successive laying of blocks without separating material, as proven by the evidence in the case, is referred to by Judge Thayer in his opinion (Rec., p. 228) as follows:—

It was shown, however, before the master that there were other feasible methods not covered by the Schillinger patent, by which a concrete pavement could be laid in sections. I shall only mention one of such other methods, which appears to me *from the evidence* to have been well known at the time of the infringement, and to have been open to use, by means of which a concrete pavement could have been as cheaply laid as by the Schillinger process. I refer to the method practiced by the defendant since the interlocutory decree in this case, of laying one block, and after the concrete has partially set removing the scantling that forms one side of the frame of the block, and laying the

next block immediately against that, and so on successively, without introducing any separating medium between the blocks as in the Schillinger process. This method of laying a pavement is not an infringement of complainant's patent, and according to the concurrent testimony of all the witnesses, the process last described separates the pavement into blocks or sections.

The testimony in the case convinces me that plastic concrete laid against an adjoining block when it is only partially set, and after the frame has been removed, does not unite with it so as to form practically one block. The weight of testimony is that the second one laid does not adhere to the first; that the blocks are divided when fully set by a sensible space, which is sufficient at least to interrupt the line of fracture, if either block is cracked from any cause.

Schillinger himself concedes in his specifications that one block laid in immediate contract with an adjoining block, which is partially set, will not adhere to it in consequence of shrinkage."

In addition to these methods of making natural points, as disclaimed by the patent, it was also proved that satisfactory and durable pavements could be laid with blocks of any size *manufactured in blocks* and *laid* in *place when hardened.* The evidence as to this class of pavements was full and ample, but so clear were the other features of the case, that it was not found necessary by the master or the court to refer to it (see *supra*, pp. .)

As to the manner of conducting the business of laying the pavement and as to the absence of any demand for a pavement laid according to any particular method, the patentee's or any other, the court (Rec., p. 228) makes the same finding from the evidence as the master (Rec., p. 167).

Quoting from the opinions of the court (Rec., p. 228):—

It appears from the evidence in the case that in making contracts for the laying of pavements, the defendant was

not required or even asked by his customers to lay them according to the Schillinger method, or even to divide a pavement into sections. He usually contracted to lay a concrete pavement of certain dimensions, and made a practice of giving a guarantee to his customer, with reference to the quality and durability of the pavement to be laid; thereafter he selected such method of doing the work as he deemed advisable. It is manifest that the use of the Schillinger invention by the defendant was not made necessary by a public demand for a pavement laid according to that patent.

Says Mr. Sedgwick in his work on damages Vol. III., p. 546 after reviewing the decisions of this court on the "entire profits rule": —

"It follows from the foregoing, that as a general rule it is right to give plaintiff the entire profits of defendant, *only* where the defendant's machine, or process or patented article *derives its entire value* from the infringement, and that but for this it would not have been used at all, but in all other cases plaintiff must show particular profits."

The general rule laid down in Mowry *v.* Whitney, 14 Wall. 620, for ascertaining profits by comparison with other processes then open to the public and adequate to obtain an equally beneficial result, is forcibly stated by Mr. Justice Strong in Locomotive Safety Co. *v.* Penn. R. R. Co., 2 Fed. Rep. 677: —

"The rule is founded upon the soundest reason. It is only that which was previously not known, or in other words, it is only the addition to human knowledge and convenience which the patentee has made, that he can be said to own. The patent laws give him an exclusive right to that addition and the advantage resulting from it and to nothing more. Undoubtedly it may be an benefit to the community to have two modes of doing certain work, instead of one, both equally economical and convenient, ac-

complishing the same result and each still patentable; but as was well remarked by the master, "unless a patentee can show an absolute advantage in the use of his patent over results which could be reached by other processes in common and unrestricted use, there has been nothing really gained, no advantage made by his invention. In such a case, though he may maintain a monopoly over patented machine, process or combination, and exact such damages as he may be able to show he has suffered from an infringement, he cannot claim any portion of what has been realized as profits in any sense owing or due to him, for the reason that the infringer could just as well have obtained such product or results, without his aid or the benefit of his work or ideas."

It would be difficult to find a case to which these fundamental propositions would be more applicable than to the case at bar. Under the facts set out in this record, it is immaterial to consider whether the so-called "entire profits" rule of Elizabeth *v.* Pavement Co. differs from the rule of "comparison" laid down in Mowry *v.* Whitney, except that in the former the standard of recovery may be fixed in the absence of evidence that the profits are due to any other source; in other words, in the burden of proof. But as before stated, no question as to the burden of proof is presented by this record.

Quoting from the opinion of the Circuit Court in overruling exceptions to the master's report (Rec., p. 227).

The next question to be considered, is whether the evidence before the master showed that any special advantage or gain had been derived from the use of the complainant's invention, and whether the evidence furnished any data for an approximately correct estimate of such gain.

This question is not embarrassed by any consideration of the question upon which party rested the burden of proof for the master's ruling on that point has *not been excepted* to and cannot be reviewed.

The ruling of the master referred to, however, appears in his first report, which was set aside and the cause again referred.

VI.

It is difficult to see what there is remaining in the several exceptions filed in the Circuit Court, open for serious consideration, as it is conceded, in the disclaimer of the patent, that a natural joint will be formed without any separating material.

It was attempted to prove that the joint thus made would be irregular — instead of smooth, — that is, that the "interlocking" of the material would prevent the joint from being as handsome in appearance as one made from separating material interposed between the blocks in process of formation. It is obvious that this involved an entire departure from the theory, that nothing else than the Schillinger device would enable the pavement to have dry joints, which would control the line of cracking, and necessarily involved the abandonment of the claim to the difference between a pavement with joints, which wouldn't crack, and one without joints which would crack. Under this new theory of appellant his claim would be for the difference between one kind of joint pavement and another.

Quoting again from the exhaustive opinion of Judge Thayer:—

> "Such being the state of the case, the ultimate question before the master was whether the joint formed by the Schillinger method, that is to say, by introducing some substance like tar paper or its equivalent, between the blocks, was better than a joint formed as last described without any

separating medium, and by a process which the defendant was free to adopt, and since the decree has adopted.

But not only was there no evidence whatever, upon which any estimate could be made, even upon appellant's own theory, of the possible advantages of the Schillinger method, but the "interlocking" theory itself was completely disproved, in the demonstration that even if the "tapping" was sufficient to cause interlocking of the concrete material, that result could not be prevented by *tar paper*, the material specified in the patent, as that would be more yielding to the tamping than the concrete itself. In other words, it would require a peculiar form of structure, such as the Russ device, which even if embodying the patent invention, under the construction adopted by the court, would be none the less an improvement upon it.

There was no possible basis then for awarding a substantial recovery on appellant's own theory.

VII.

Neither is there any merit in the suggestion in the exceptions that more time was required to demonstrate the practicability of the different processes in evidence.

As in all litigation, the parties to the litigation must be presumed to have submitted all the obtainable evidence at their command in support of their respective claims. As no exceptions were made to the admission of any testimony, appellant must be held to have admitted the relevancy of all that was submitted by appellee. The decision of this case could not be delayed to test the durability of the different pavements, but every claim and relevant hypothesis in evidence must be at once proved or disproved

by the best obtainable expert or other evidence, which the respective parties could or saw fit to submit. This is too elementary for amplification or citation.

It is submitted that the judgment of the court below in case No. 96, must be affirmed.

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